MARCH | 1958

products finishing

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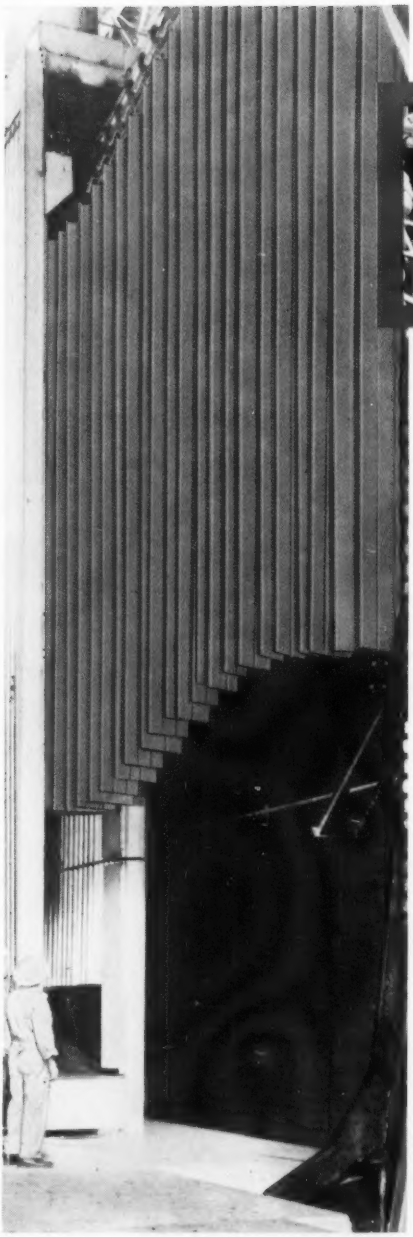
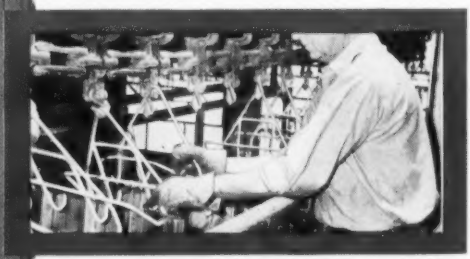
Finishes on metal products



Hooking panels on conveyor 30 feet above floor at start of finishing line.



World's biggest flow-coat problem . . . solved with Sherwin-Williams Kem® Enamel

How do you flow-coat steel roof deck panels up to 28½ feet high — without runs, sags or vapor wash?

Inland Steel Products Co., Milwaukee, Wisconsin, faced this problem with its Milcor Steel Roof Deck. Usual materials and methods created uneven film protection due to vapor from lower portions.

Sherwin-Williams flow-coat specialists helped Inland Products engineers solve this problem. Now Milcor Roof Deck is finished with a baked-on epoxy enamel primer that resists scuffing . . . reaches every crevice of deeply grooved panels to give a heavy continuous coating . . . at lower cost than dip-coating with cheaper material!

Investigate what Sherwin-Williams Technical Service can offer in meeting your product finishing problems. Call or write The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio. In Canada: 2875 Centre St., Montreal.

SHERWIN-WILLIAMS
INDUSTRIAL FINISHES

For more data circle 301 on Postpaid Card

MARCH, 1958

1	17	33	49	65	81	97	113	129	145	301-2nd Cov.	330	346	362	378	394	410	426	442
2	18	34	50	66	82	98	114	130	146	302-3rd Cov.	331	347	363	379	395	411	427	443
3	19	35	51	67	83	99	115	131	147	303-4th Cov.	332	348	364	380	396	412	428	444
4	20	36	52	68	84	100	116	132	148	304	317	333	349	365	381	397	413	429	445
5	21	37	53	69	85	101	117	133	149	305	318	334	350	366	382	398	414	430	446
6	22	38	54	70	86	102	118	134	150	306	319	335	351	367	383	399	415	431	447
7	23	39	55	71	87	103	119	135	151	307	320	336	352	368	384	400	416	432	448
8	24	40	56	72	88	104	120	136	152	308	321	337	353	369	385	401	417	433	449
9	25	41	57	73	89	105	121	137	153	309	322	338	354	370	386	402	418	434	450
10	26	42	58	74	90	106	122	138	154	310	323	339	355	371	387	403	419	435	451
11	27	43	59	75	91	107	123	139	155	311	324	340	356	372	388	404	420	436	452
12	28	44	60	76	92	108	124	140	156	312	325	341	357	373	389	405	421	437	453
13	29	45	61	77	93	109	125	141	157	313	326	342	358	374	390	406	422	438	454
14	30	46	62	78	94	110	126	142	158	314	327	343	359	375	391	407	423	439	455
15	31	47	63	79	95	111	127	143	159	315	328	344	360	376	392	408	424	440	456
16	32	48	64	80	96	112	128	144	160	316	329	345	361	377	393	409	425	441	457

NAME _____ POSITION _____

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1	17	33	49	65	81	97	113	129	145	301-2nd Cov.	330	346	362	378	394	410	426	442
2	18	34	50	66	82	98	114	130	146	302-3rd Cov.	331	347	363	379	395	411	427	443
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12	28	44	60	76	92	108	124	140	156	312	325	341	357	373	389	405	421	437	453
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14	30	46	62	78	94	110	126	142	158	314	327	343	359	375	391	407	423	439	455
15	31	47	63	79	95	111	127	143	159	315	328	344	360	376	392	408	424	440	456
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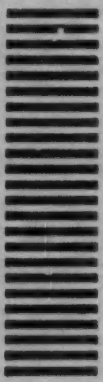

Your Monthly Source For Finishing Ideas

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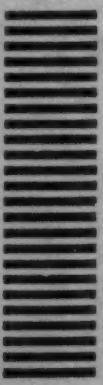
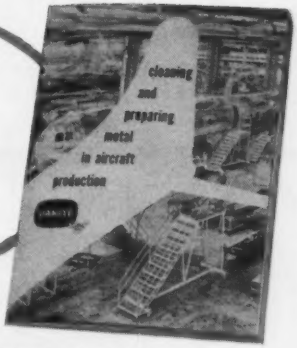


DO YOU NEED BETTER METAL CLEANERS FOR THESE JOBS?



All the tough jobs are covered by Oakite's booklet on *"Cleaning and preparing metal in aircraft production"*. Just check this list of contents for reminders of operations that give you trouble:

	SEE PAGES
☐ Cleaning aluminum (with or without etching)	2
☐ Preparing aluminum for welding	3
☐ ChromiCoating aluminum before painting	4
☐ Stripping paint from aluminum, steel	5, 9
☐ Barrel finishing aluminum, steel, copper	5, 9, 11
☐ Cleaning magnesium	6
☐ Cleaning steel; derusting and descaling	7
☐ Preventing rust	8
☐ One-operation preparation for painting	9
☐ CrysCoating steel before painting	10
☐ Cleaning copper and its alloys	11
☐ Controlling water in paint spray booths	12

OAKITE

FREE For your copy of this 16-page illustrated booklet, write Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

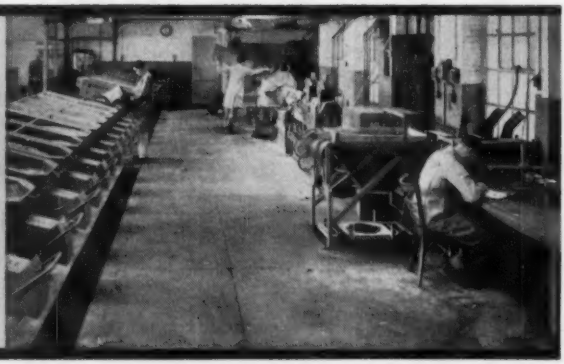
In our 50th year. .

Technical Service Representatives in Principal Cities of U. S. and Canada

For more data circle 304 on Postpaid Card

NOW'S THE TIME... HERE'S THE PLACE
to find the tumbling abrasive you need

The big Norton Sample Processing Department solves your finishing problems with a wide variety of latest types of tumbling equipment — plus Norton ALUNDUM* TUMBLEX* abrasives, made in four different types and many different sizes.



One leading aircraft parts manufacturing company reports saving over $90,000 yearly by shifting from hand-finishing to barrel finishing with Norton TUMBLEX abrasives.

There's one sure way for you, too, to get these cost-cutting, product-improving "Touch of Gold" advantages. Your metal parts can range from tiny needles to hefty forgings . . . may be simple or complicated, hard metals or soft . . . may require deburring, descaling, better color and closer finish. Just send sample parts to our Sample Processing Department. They'll be returned to you completely finished to requirements, with a detailed report. Or, next time you're in our area, drop in and learn how your finishing can be improved.

NORTON COMPANY, General Offices, Worcester 6, Mass. Plants and distributors all around the world.

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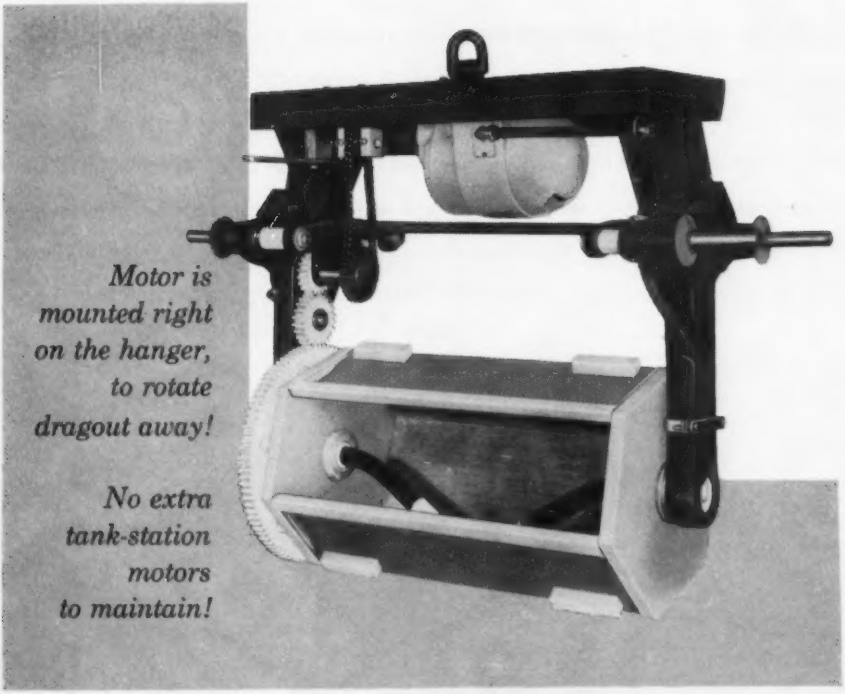
G-342

NORTON
ABRASIVES
Making better products... to make your products better

NORTON PRODUCTS
Abrasives • Grinding Wheels
Grinding Machines • Refractories

BEHR-MANNING DIVISION
Coated Abrasives • Sharpening Stones
Pressure-Sensitive Tapes

For more data circle 305 on Postpaid Card



New H-VW-M mercil cylinder has its own motor drive

Step up your small-part production, cut maintenance costs and worries, with this efficient, economical unit!

Totally enclosed gear head motor drive (⅓ HP) has a hand-operated clutch for easy loading and unloading. A substantial channel-iron cover protects the drive unit parts from drippage.

The cylinder unit is designed for total submersion, and is fitted with double flexible dangler contacts. It may be operated with belt drive or regular gear drive as shown.

To meet your production requirements, this equipment is available with Melamine, Tempron, or Plexiglas cylinders, in 14" x 30" I.D., and 14" x 36" I.D. sizes. A long extension cord is furnished, to supply power from any convenient outlet box. Want more information? Write today to **Hanson-Van Winkle-Munning Company, Matawan, N. J. Offices in principal cities.**

H-VW-M

PLATEMANSHIP—Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

4569

INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

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How to make metal blackening an exact science: What metal do you have to blacken? Steel, copper, brass, zinc? There are seven Ebonol® compounds in Enthone's specially developed series of blackeners for you to call on for jet blackness, maximum wear resistance and adhesion. Enthone is exceptionally well equipped and qualified to assist you in all phases of metal finishing. Years of practical experience, extensive research and service laboratory facilities manned by a team of specialists in the finishing field are at your service. Write us about your needs or problems. Send a sample of your product in question, if possible. Enthone, Inc., 442 Elm St., New Haven 11, Conn.

ENTHONE

ENTHONE, INC. IS A SUBSIDIARY OF AMERICAN SMELTING AND REFINING COMPANY

58-2

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products finishing

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Published monthly with two issues in March and copyrighted (1958) by Gardner Publications, Inc., 431 Main St., Cincinnati, Ohio. Printed in U.S.A. Accepted as controlled circulation publication at Cincinnati, Ohio.

For more data on advertisement on opposite page, circle 307 on Postpaid Card

STUTZ

BALL ANODE CONTAINER
NEW CONSTRUCTION
FOR LONG SERVICE

STUTZ CONSTRUCTION — Heavy gauge steel with wire woven through steel angle firmly attached to main stem. Cannot come apart or loosen. Side clip is for STUTZ BARREL PLATING TANKS having submerged rectangular anode bars. Side clip not furnished for racked plating tanks. Standard hook 6 inches. Other hook lengths furnished in quantity of 100 or more.

WELDED CONSTRUCTION — Note how welds have dissolved or broken in use. Often caused in barrel plating where currents are high and barrel transfer is rapid.

PRICES—11 cents per inch for basket lengths 18 inches or longer. Increments 3 inches. Curved containers only for 14" and 16" diameter barrels 15 cents per basket additional.

Serving Industry 35 Years

THE STUTZ CO.
4410 Carroll Ave., Chicago 24, Ill.

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products finishing

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Circulation over 21,000— largest in the finishing field

The NEW Hammond FLAT-FINISHER

MODEL FF-6

WILL HELP YOU SOLVE YOUR FLAT FINISHING PROBLEMS

AVAILABLE IN 6" — 7" — 8" SIZES WITH SINGLE OR MULTIPLE HEADS

OTHER MODELS TO 12" ALSO AVAILABLE

Fast, uniform finishing of flat parts!

Grind and polish metal or plastic parts in one semi-automatic operation! Where high production and consistent finishes are required, look for these Hammond features:

AUTOMATIC AIR TENSIONING: maintains correct tension on abrasive belts and conveyor belt.

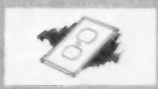
VARIABLE SPEED CONVEYOR: rate of feed is adjustable from 0 to 60 FPM.

WORK HOLDERS: hold-down rolls, electro-magnetic platen and various types of conveyor belts.

AMMETER CONTROL: an ammeter for each head allows operator to determine and maintain the polishing pressure necessary for a uniform finish and longer belt life.

V-BELT DRIVE: allows abrasive belt speed to be changed to suit the work.

TYPICAL PARTS FINISHED WITH THE FF-6



SWITCH PLATES

PRINTED CIRCUITS

WRENCHES

FLAT STOCK

Send samples and production requirements for an engineering report on your finishing job.

Hammond Machinery Builders INC.

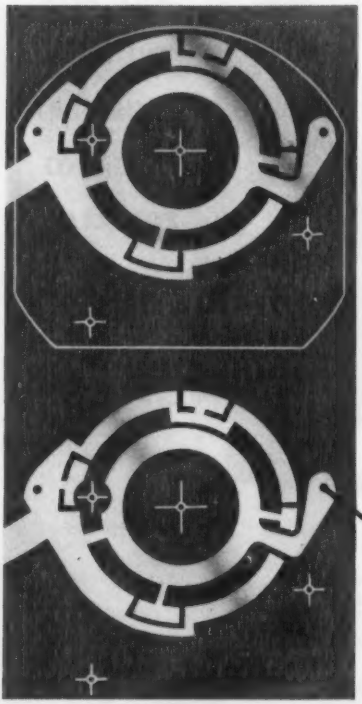
1622 DOUGLAS AVE. • KALAMAZOO, MICHIGAN

SEE US AT BOOTH 1704, ASTE SHOW, MAY 1-8, PHILADELPHIA

For more data circle 309 on Postpaid Card

Now you can plate THROUGH holes in printed circuits with

NEW CuSOL PROCESS



Photomicrographic cross-section of printed circuit shows how the CuSOL process permits plating through holes in core stock.

Plating *through* holes in printed circuits is only one big feature of Seymour's new CuSOL® process. Besides the exceptional throwing power which makes this new, exclusive Seymour process ideal for plating of printed circuits CuSOL has other features which make it unique and useful to copper plating.

CuSOL may be added directly to either Copper Sulphate or Copper Fluoborate baths.

CuSOL permits smoother, more ductile deposits of *any thickness* than is possible with molasses, bone glue or dextrin baths.

CuSOL eliminates "treeing" and nodular build-up.

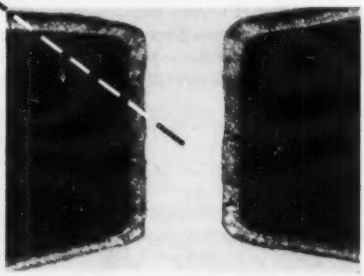
CuSOL deposits are easy to buff.

CuSOL copper plate is hard (75 on Rockwell F scale).

CuSOL permits use of wide current density range and increases plating speeds from 50% to 200%.

CuSOL is inexpensive to use and economical to maintain.

® Patent Applied For



Write for detailed information

THE SEYMOUR MANUFACTURING CO.

16 FRANKLIN ST., SEYMOUR, CONNECTICUT

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How many places can you use push-button touch-up?

Damage to the finish of your product happens anywhere—from your own assembly department to the final customer. With the Sprayon Self-Spraying Touch Up Tool *any* employee quickly repairs the damage *right where it happens.* Costs go down. Eye-appeal of your product and customer satisfaction go up! Sprayon goes right to your source for your own touch-up finish, custom loads the Tools for you under your own label. Exclusive Sprayon features mean even unskilled help do a factory-match job in minutes ...for pennies! It's a complete paint shop in a can!

Write for FREE touch-up folder.

Free training movie, "The Finishing Touch" (16 mm, sound, color, 11 minutes) Write for information.

SPRAYON *Self Spraying* TOUCH UP TOOL®

SPRAYON PRODUCTS, INC.

2077 East 65th Street • Cleveland 3, Ohio

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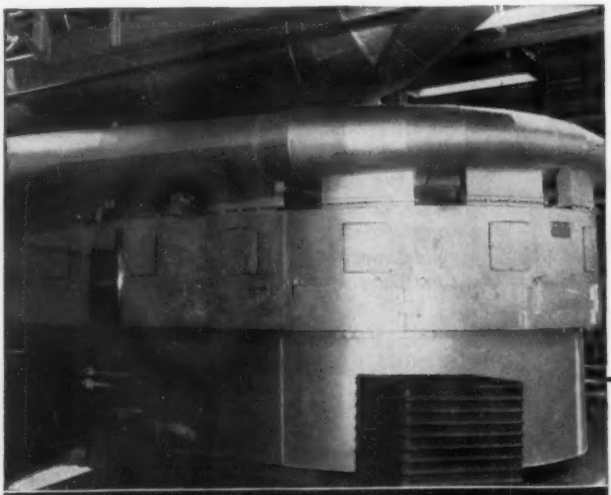
KIRK AND BLUM
FUME CONTROL SYSTEM
Saves 5 Ways..

1. REDUCES AIR VOLUME
2. LOWERS MAINTENANCE COSTS
3. CUTS REPLACEMENT COSTS
4. IMPROVES WORKING CONDITIONS
5. ELIMINATES DAMAGE TO OTHER EQUIPMENT

In large and small plants, Fume Control Systems engineered, fabricated and installed by KIRK & BLUM show substantial savings by increasing the life of costly plating equipment.

Here, a hood with convenient access openings encircles the tanks — preventing cross currents and reducing air volume requirements.

Fumes are picked up at the outside of the tank, clean air is drawn over the machine's mechanism in the center. This keeps damaging corrosive fumes away from costly moving or mechanical parts.



KIRK & BLUM Fume Control on an Automatic Plating Machine in a noted auto ignition parts plant. Note hinged anode access and inspection doors just above tank top.

Write for Booklet F, showing typical installations.

The Kirk & Blum Mfg. Co.,
3116 Forrer Street,
Cincinnati 9, Ohio

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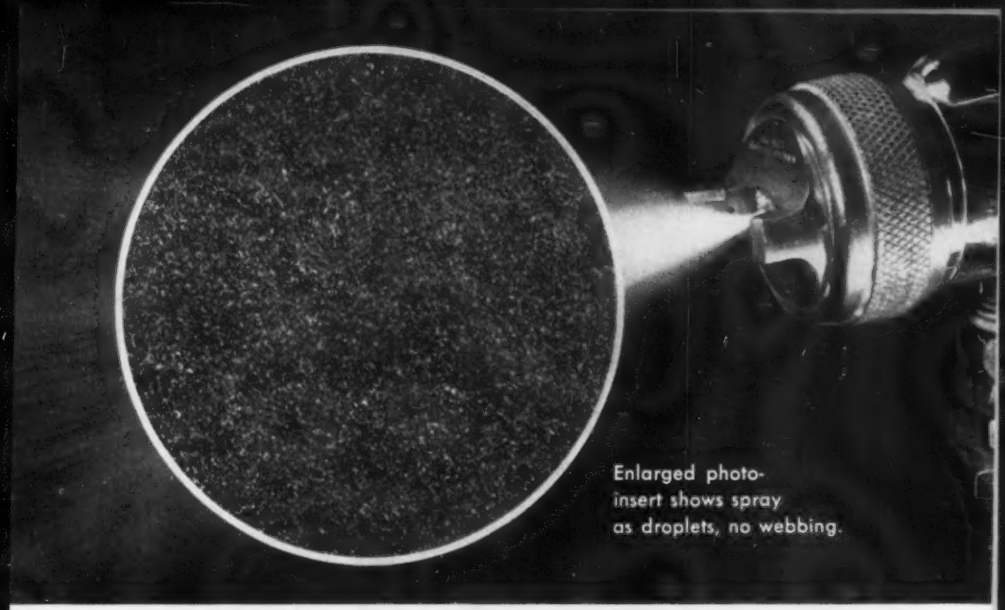

Enlarged photo-insert shows spray as droplets, no webbing.

the strippable booth-coating that sprays fast . . . ends cobwebbing

LIQUID ENVELOPE #49-36 LO-VIS

LO-VIS gives you all the low-cost clean-up benefits of strippable booth coatings *but completely eliminates cobwebbing!*

It's a low-viscosity formulation, fast spraying, fast drying, and recommended especially for low-pressure equipment.

When clean-up time comes, LO-VIS peels off in big pieces and your booth is cleaned in minutes!

Try LO-VIS and start saving on booth maintenance. Send the coupon now for a 5-gallon sample at the drum-lot price.

#49-36 LO-VIS is one of three formulations for use under other-than-ordinary operating conditions. When special properties are *not* required, we recommend . . .

LIQUID ENVELOPE #49-5396-2

H. D. ECONOMY

. . . used world-wide for over 10 years.

BETTER FINISHES & COATINGS, INC.

268 Doremus Ave., Newark 5, N. J.

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Gentlemen:

Please send me a 5-gallon test-sample of Liquid Envelope #49-36 LO-VIS and bill me at the drum-lot price.

NAME:_____

COMPANY:_____

ADDRESS:_____

HILL ACME Research and Development Facility

FRINGE BENEFIT!

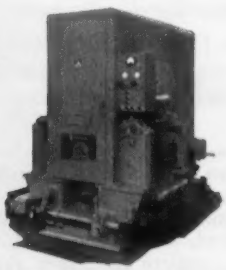
FOR OUR CUSTOMERS . . .

A brand new RESEARCH and TESTING facility where new methods and machines of HILL ACME manufacture are in operation on actual production work supplied by our customers and prospects for HILL Grinding and Polishing machines.

If YOU have a pre-finishing problem concerning ferrous or non-ferrous metals, plastic, lucite or similar materials we invite you to visit this innovation in the field of grinding and polishing.

The home of HILL Grinding and Polishing machines. Research facility is in foreground.

Polishing Stainless Steel Sheet for Sanitary Finish on a HILL sheet and plate polishing machine



HILL Pinch-Roll type machine for polishing strip on multiple units

THE HILL ACME COMPANY

1201 WEST 65th STREET
CLEVELAND 2, OHIO

Manufacturers of: "HILL" Grinding and Polishing Machines • Hydraulic Surface Grinders • "ACME" Forging • Threading • Tapping Machines • "CANTON" Alligator Shears • Bar-Billet Shears • "CLEVELAND" Knives & Shear Blades

For more data circle 314 on Postpaid Card

Make Your Next Finishing System a BURDETT!

This One Is Producing 4000 lbs. Per Hour With a Conveyor Speed of 8 fpm.

Here is one more sparkling example of well above average output, at much below normal costs, with excellent match of color and hardness of finish.

Located in the Mayville, Wisconsin plant of Maysteel Products, Inc., this complete Burdett Finishing System consists of a 3-stage washer, a single pass dry-off oven —a 2-pass prime oven—and a 2-pass finish oven.

The 3-stage washer features a stainless steel immersion heating system which provides solution temperature rise of 5° per minute.

Production of this plant is largely on a job basis, including heavy transformer tanks, requiring a very hard finish—heavy lathe benches finished with a wrinkle finish—and varied metal enclosures and products.

Fuel is propane gas.
Conveyor speed—8 FPM.
Cost of $6.50 per hour is average over a six month period, for the entire system.

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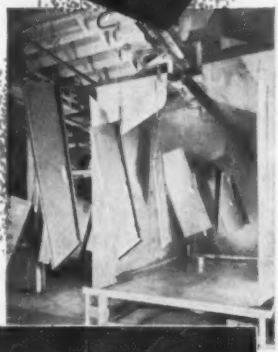

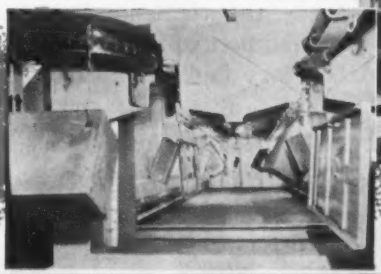

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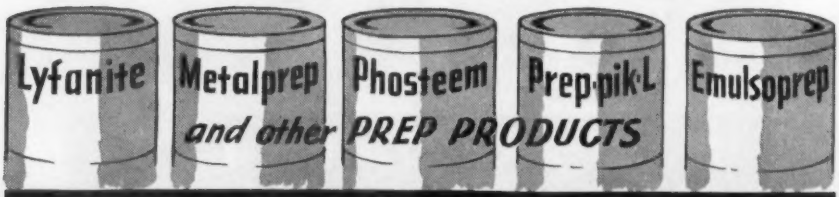

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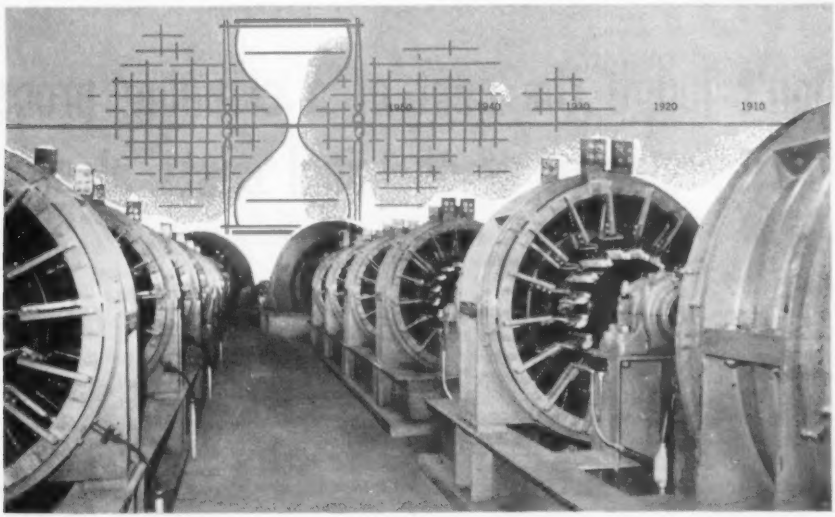

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DU PONT *PRODUCT NEWS*

Don't judge the cost of a cleaning process by solvent or chemical costs alone

Du Pont's new Cost Analysis Service can help you determine total costs ... the only realistic basis of comparison

It's easy to draw misleading conclusions about the comparative costs of vapor degreasing and wet cleaning by comparing only the cost of trichlorethylene versus alkali chemicals. Such conclusions can result in a costly mistake when choosing a metal-cleaning process. *Invoices tell only part of the story!*

Du Pont has initiated this new cost-analysis service to help you find out what your metal cleaning is now costing, or, in the case of expansion or new installations, to help you determine the most efficient and economical process. Based upon sound accounting principles and 25 years of Du Pont "know-how" in metal cleaning, this service reveals the *total* cost of your operation. All cost factors are considered, including utilities, maintenance and depreciation, labor and the important item of "return on investment."

This Du Pont service can save you real money—in your present operation, or in the consideration of new or replacement equipment. Example: in a plant operating 7 degreasers, over-all cleaning costs appeared out of line. Changes adopted as the result of a Du Pont survey paid off in savings of $3,000 to $6,000 per degreaser.

GET ALL THE FACTS about this informative, cost-saving service. Just ask your local distributor of Triclene® D trichlorethylene, or send us the coupon at right, below.

* * *

DU PONT TECHNICAL MAN points out for visitor how thoroughly grease is removed from metal part suspended in model degreaser. Glass sides of degreaser enabled visitors to see entire process.

Du Pont booth at Metal Show featured Model Degreaser

Visitors to the recent Metal Show in Chicago saw "Triclene" D trichlorethylene in action. They learned how quickly and thoroughly the vapor-degreasing process works and heard about Du Pont's new cost analysis. If you missed the show and are interested in learning more about vapor degreasing and/or Du Pont's Cost Analysis Service, just send us the coupon at right.

How's your supply of "Tri"?

Check your supply of trichlorethylene and be sure you won't be caught short during peak work loads. If you're low, better give your local distributor of "Triclene" D a call. He's well equipped to handle your orders promptly and efficiently.

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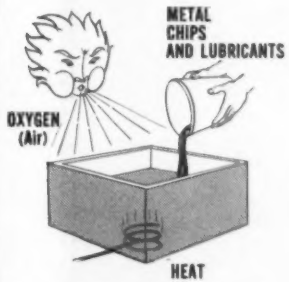

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assures fewer degreaser cleanouts

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"Triclene" D contains special stabilizers to protect the solvent against the major deteriorating influences present in modern metal-cleaning operations . . . fatty acids, sulfur-bearing lubricants, oxygen, heat and metal chlorides. These stabilizers, in turn, are backed by a neutral acid acceptor. All of these stabilizers are designed to remain in the solvent indefinitely through distillation after distillation.

The stabilizers in Du Pont "Triclene" D do not combine with fatty acids and other contaminants to form sludge. This is your assurance that your degreaser will maintain peak operating efficiency with fewer, easier cleanouts.

Try Du Pont "Triclene" D and find out for yourself how "full-time" stabilizers make the difference!

New $2 million Du Pont Laboratory will help solve your metal-cleaning problems

In April 1958, the facilities of Du Pont's new Sales Technical Laboratory will provide extra support for the services now offered by your local distributor of "Triclene" D and your Du Pont Technical Representative.

This modern laboratory will have the latest conveyorized production-line vapor-degreasing equipment, including an ultrasonic unit . . . all equipment needed to research problems encountered in both large and small units, hand-operated or mechanized.

Accurate metering devices will make it possible to pinpoint utility costs and to determine solvent losses for all types of production operations. Customers' actual plant conditions can be duplicated and evaluated against norms established at this new laboratory. Actual and theoretical operating costs can be compared.

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☐ Please send more information on your new cost analysis service.
☐ Please send me your booklet on vapor degreasing.
☐ Please have your representative call for an appointment.

PF-3

*Name*_____ *Position*_____
*Present method of cleaning*_____
*Firm*_____
*Address*_____
*City*_____ *Zone*____ *State*_____

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For more details about the "Little Steve" and what it can do for you, contact your local Stevens Sales Representative or write direct to: Frederic B. Stevens, Inc., 1800 Eighteenth Street, Detroit 6, Michigan

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PAINT MILEAGE INCREASED 75% WITH

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RESULTS? Paint mileage increased 75% with less labor. With hand spray, they painted enough pump housings and parts for 4 pumps per gallon of paint. Now, with *Electrostatic*, they're painting 7 complete pump sets per gallon.

Where Bowser formerly needed two shifts in finishing, one shift now handles even greater production. With hand spray and limited oven facilities, they used to turn out 15 sets per hour. Now, they can paint 55 sets an hour, either prime or finish. Color changes are made quickly and easily with Ransburg equipment, and because of its efficiency in operation, maintenance cost in the paint area is cut 50%.

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Whatever your product, if it's painted, we'd like to tell you more about the worthwhile savings and advantages which can be yours with RANSBURG ELECTROSTATIC PAINTING PROCESSES. Write for our No. 2 Process brochure which cites numerous examples of electrostatic spray painting on a wide variety of products.

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THER REACTRON integrates control and rectifier in same cubicle—requires no heavy cable between rectifier cubicle and operator's panel—features compact "portable radio size" operator's panel that's readily mounted almost anywhere without requiring floor space.

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AS EASY TO USE AS EVER

Brush, spray, or dip – whatever method of application you use, Nacromer YNC requires no additional labor or equipment. Simply add a small amount to your regular coating material–that's all there is to it!

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It takes such a small quantity of Nacromer YNC to create a unique finish that the added cost for your product is negligible. And, Nacromer YNC is versatile too! You can use it on any sealed surface–wood, metal, plastic, leather, paper, etc.

NEW NACROMER YNC

Yes, new Nacromer YNC will give your product more sales appeal, a richer look. Why not see for yourself how this beautiful "more lustrous than pearl" Nacromer YNC can help you? Write today for additional information. (Please specify nature of the coating vehicle used.)

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AK ETCHES, with *ease* and *efficiency!* This unique formulation works on all aluminum alloys and *prevents formation* of aluminum oxide scale by means of a special sequestering agent. No more scale means no more down-time for costly clean-up . . . less chance for coil and tank damage in maintenance . . . better temperature control . . . longer solution life, with lower product consumption . . . greater operational safety through the elimination of mid-shift dumping. Cowles AK gives a more uniform finish for plus results through easier inspection, quality improvement and increased end product sales appeal.

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DO DE-SMUTS, *without hazard* to safety! Personnel problems connected with the handling dangers of liquid acids disappear overnight with *powdered acid* Cowles DO. Highly efficient, DO solutions de-oxidize the primary aluminum oxide film rapidly, then re-oxidize the metal surface slowly and uniformly with an air-stable oxide film and no residue of smut. Surfaces are super-clean for spot-welding, anodizing or chromate finishing. Recommended cleaning concentrations and solution temperatures are low—total solid content remains low . . . rapid drying-on is inhibited . . . residual film is minimized . . . rinsing is facilitated.

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editorial

March, 1958

The Job Finisher's Biggest Job

The Job Finisher, whether he be a Job Plater or Job Painter, or both, must be scientist, engineer, business manager, and salesman at the same time if his business is to prosper.

First, he must be a skilled technician, so that his customers can depend on the unvarying high quality of his work. He must be an efficient production man, too, so that he can turn out a quality job at a competitive price. He must know his costs, because only then can he set a price that is fair to his customers and to himself. He must employ the most modern equipment available, to take advantage of the greater productivity which its use makes possible. To attract and keep efficient and careful workers, he must be a good manager and employer.

However, to survive in today's highly competitive market, the Job Finisher must make a greater effort to provide his customers and the general public with an accurate picture of his services and functions. There is urgent need for a forceful, dramatic program of education to instruct purchasing agents and other individuals who are potential customers in the "facts of finishing."

These people must be taught (among other things) that a finish can be as good as they require, and that the price is dependent upon the kind of finish, the quality, and the amount of processing required. Many times, knowing his customer's requirements, the finisher can recommend a finish that is less expensive and yet completely adequate to fill the customer's need.

Finishers should not accept jobs at prices below that at which they can make a profit. This practice is detrimental to the best interests of the industry.

Buyers of the finisher's services need to be reminded of the important part a durable, attractive finish plays in product sales. Finishers should tell their customers what constitutes a quality finish. And they should point out the advantages of buying from an ethical, efficient finishing shop.

Pamphlets and brochures describing shop facilities and quality control methods are useful and impressive. A full description of shop equipment and processes is required in order that a shop may be certified for sub-contract work for an agency of the Government. A somewhat less complete pamphlet would help in selling services to other customers, too.

Many progressive job finishers are employing some of the above suggestions now. The adoption of these practices by other finishers will help the entire Job Finishing Industry to "grow up."

Ezra A. Blount

—EDITOR

Norfolk & Western's main shops at Roanoke, Virginia, include a fully equipped plating shop and a recently installed traveling steam spray painting booth . . .

Finishing Facilities for a Modern Railroad

By GERARD H. POLL, JR.
Associate Editor

The N & W operates a sizeable plating shop in Roanoke, Virginia. It operates very much as a job shop would, since it applies a variety of electrodeposited finishes for the railroad. The metals deposited are primarily for maintenance purposes —reclaiming and renewing parts that have been worn in service.

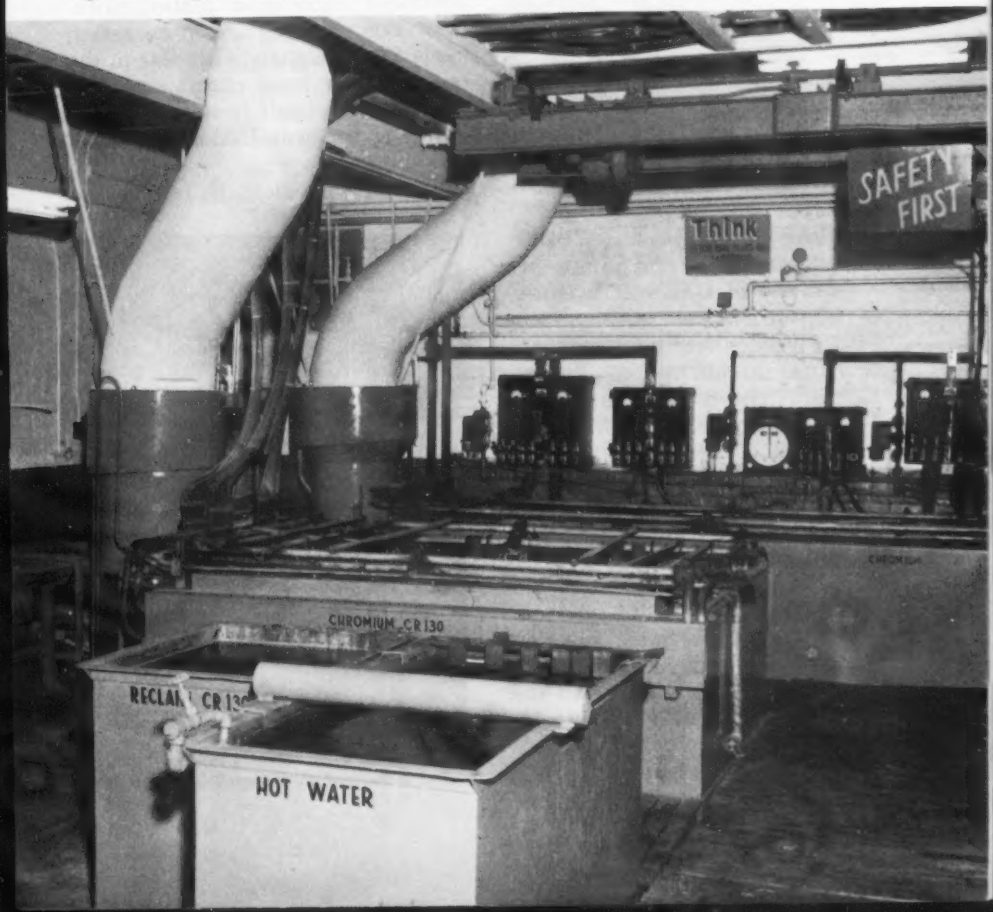
This plating installation, in the heart of N & W's main shop, has the task of doing almost all of the plating required by a modern railroad—more than a casual observer would think. It includes almost every type of plating from heavy industrial hard chromium maintenance plating of parts that have worn down in service to silver plating of tableware used in dining cars and in the railroad-operated hotel in Roanoke.

Hard Chrome Plating

One of the largest jobs this N & W captive shop has is to hard chromium plate parts for reclamation (Figs. 1-10), so that they can be machined to their original dimensions and tolerances. The hard chrome tanks are run continuously: the night shifts loads them and the day shift unloads them.

An overhead hoist raises and lowers the usually heavy pieces in and out of the tanks. The complete cycle is as follows:

Fig. 1—Plating tanks used for depositing hard chrome on parts that have been worn in service.



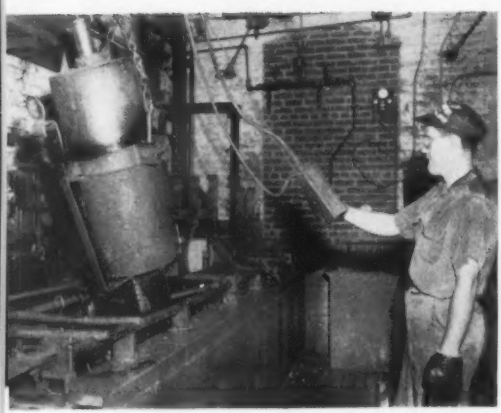


Fig. 2—Worn axle that has been plated with hard chrome being removed from plating tank.

1. Grind the worn part so that it is uniformly undersize, then calculate how long it must be plated to make it slightly oversize.
2. Vapor degrease.
3. Clean by sandblasting or electrocleaning for one minute in a solution of Oakite 90 cleaner.
4. Dip in a 50 per cent solution of hydrochloric acid.
5. Rinse in cold water.
6. Hard chromium plate in a bath of CR-130 (19.5 deg. Baume') operated at 118 deg. F. Special conforming anodes are used when required by the shape of the part.
7. Rinse.
8. Bake to relieve hydrogen embrittlement. 350-400 deg. F. for two hours. Some parts are stress relieved both before and after plating.
9. Grind down uniformly to the proper dimensions in N & W machine shop.

"Some parts . . . are plated with a conventional chromium plating solution."

Parts that must be masked to prevent deposition in certain areas receive a spray coating of Unichrome Ucilon Stop-Off Lacquer No. 323 or Egyptian Lacquer Stop-Off 1-EV-250 over the areas that are to be protected from the plating solution.

Conventional Chromium Plating

Some parts, such as hardware and trim parts used in railroad passenger cars, are plated with a conventional chromium plating solution. The cleaning and preparation cycle for such parts is similar to the one used for hard chromium. The plating cycle itself is as follows:

1. Copper flash. Ucilon pyrophosphate copper.
2. Buff with cloth buffs.

Fig. 3—Inside of steam cylinder liner is plated with hard chromium 0.006 inch thick.

"Another job that keeps the N & W shop busy is replating silverware . . ."

3. Bright nickel plate (Fig. 11). Udylite bright nickel. pH 3.0-4.8; nickel sulfate, 40 oz./gal.; brightener No. 1-RL, 0.125 per cent by volume; brightener No. 3, 0.8 oz./gal.; Non-Pitter No. 2, 0.5 pound per 100 gallons. Total, 530 gallons.
4. Chromium plate. CR-110 plating bath; chromic acid, 250 g./l.; sulfate, 2.5 g./l.; 940 gallons total.

Replating Silverware

Another job that keeps the N & W shop busy is replating silverware (Fig. 12) for the dining cars and the local N & W-owned hotel. This is a relatively simple process. Parts are stripped of the remaining silver plate, then buffed (Fig. 13). A silver cyanide strike follows. Plating in an H-VW-M Silver-Lume bath which is operated at 120 deg. F., completes the process.

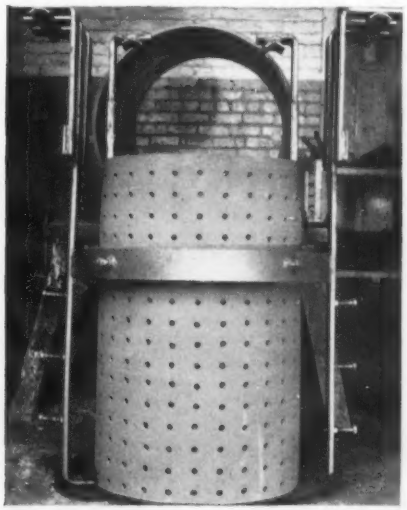


Fig. 4—Conforming anode and hanger used to hard chromium plate cylinder liner (Fig. 3).

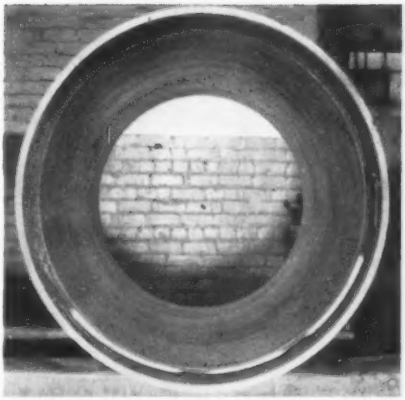


Fig. 5—Interior of steam cylinder liner, hard chrome plated to restore original dimensions.

Case Hardening

Some parts for railroad rolling stock must be selectively case hardened. N & W does this as follows:

1. Apply a wax coating to the area of the part that is to be case hardened.
2. Apply 0.001 inch of copper by plating in a du Pont cyanide high-speed copper bath.
3. Case harden. Copper plated areas are not affected by the case hardening process; thus this application of copper plating allows case hardening to be done selectively.
4. Strip off copper.

Even the trainmen's lanterns are plated in this shop. A Unichrome copper-tin (bronze) plating solution is used to apply a corrosion-resistant base coating. Then a con-

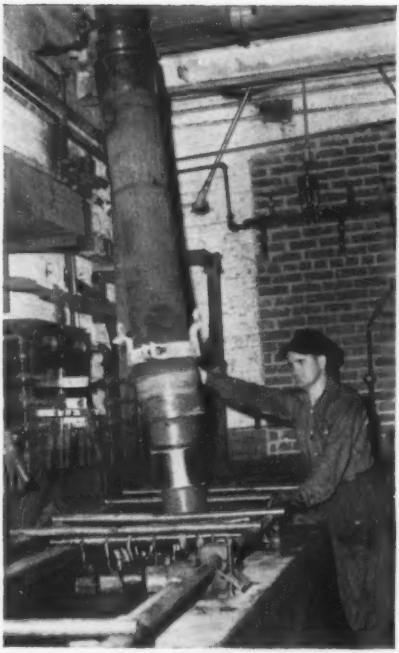


Fig. 6—A large axle is being taken out of hard chromium plating tank. The bearing area (lower end) has been plated.

"Extensive chemical and metallurgical laboratory facilities . . . are maintained . . ."

ventional chromium plate is applied to give the lanterns better wear resistance. The bronze plate is buffed before the chromium is applied.

Laboratory Facilities

Extensive chemical and metallurgical laboratory facilities for the entire Norfolk and Western Railroad are maintained in the shops at Roanoke. One responsibility of the chemical laboratory is the regular routine analysis and chemical control of the many different cleaning, treating, and plating solutions used in the electroplating department.

Samples are taken regularly and analyzed. The results of the analysis, together with laboratory recommendations for additions to maintain the solution concentrations at standard or optimum conditions, are transmitted to the plating su-

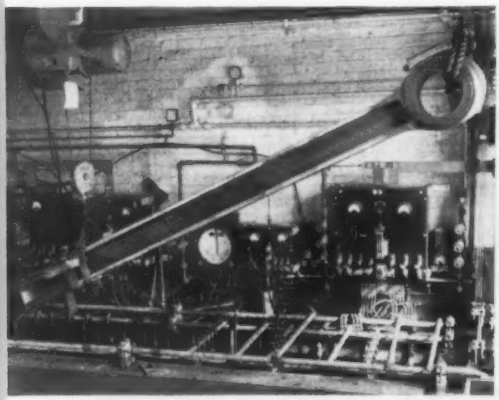


Fig. 7—Flat surface areas adjacent to bearing areas of locomotive main rod have been hard chrome plated. Note conforming anode.

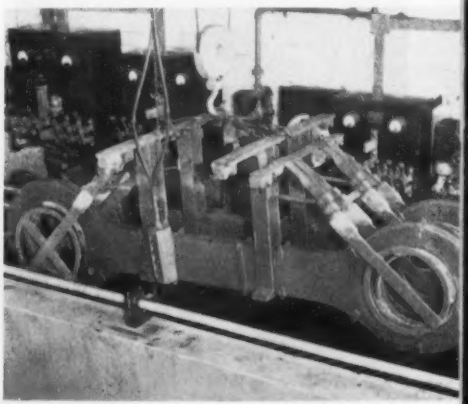


Fig. 8 — This Class "J" locomotive rod has been electroplated with hard chromium on the areas that are subject to lateral wear.

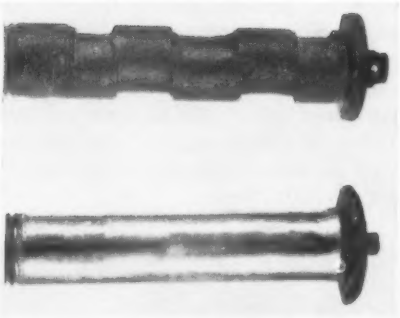


Fig. 9—Passenger truck pin (top) was case hardened, ran 437,000 miles. Maximum wear: 0.171 inch. Same part (bottom) was hard chromium plated (0.008 inch), ran 789,000 miles. Maximum wear: 0.012 inch.

Fig. 10—These miscellaneous parts have been hard chromium plated in Norfolk and Western shops at Roanoke, Virginia. Hard chrome tanks run continuously: night shift loads the tanks and the day shift unloads them.

pervisor in the form of a written laboratory report (Fig. 14). This prevents misunderstandings and errors and provides a permanent record of solution concentrations on any particular day, and the additions made. These records serve as operating records, and can also be used for cost accounting.

N & W designs, builds, and insulates its own plating racks. Ucilon 218X plastisol rack coating is applied by dipping the rack in the plastisol and baking it at 350-400 deg. F.

Paint Finishing

The N & W freight car shop at Roanoke has a capacity of 20 cars

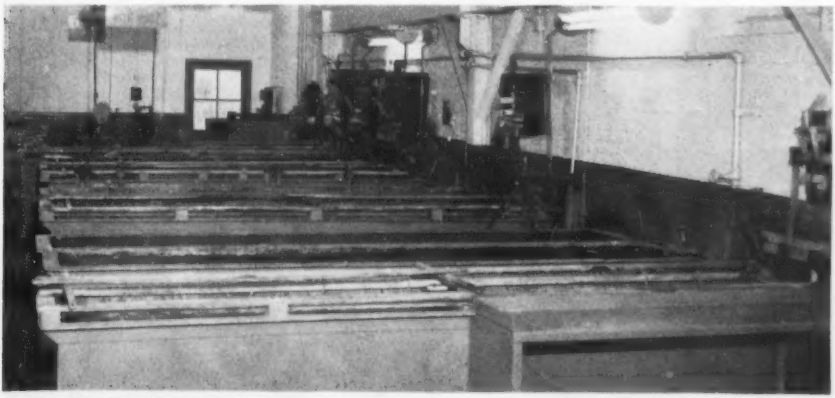


Fig. 11 — Norfolk and Western's general plating room, where a variety of metals are applied—cadmium, silver, nickel, zinc, bronze and others. Most plating performed here is for maintenance and repairing of railroad equipment that has been worn or damaged.

per day. The finishing equipment is as modern as today.

After fabrication, welding, and assembly in the car-building yards, each car travels down a line set up to finish railroad cars quickly and economically. The line includes facilities for blast cleaning the coal cars and spray application of two types of black organic finishes as well as stencilling with white paint for identification.

Fig. 12—This tableware is used in dining cars and railroad-operated hotel. It has been silver plated in company's shop at Roanoke. Silverware is first stripped and polished, then replated.

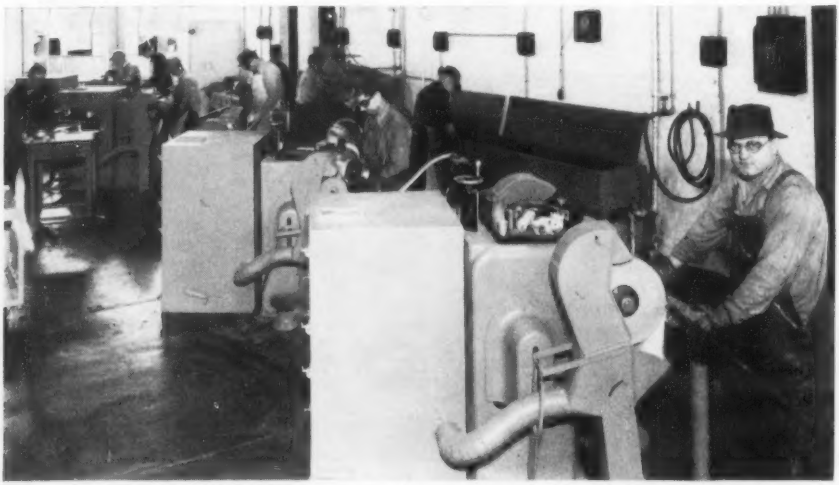


Fig. 13—Polishing and buffing room in Norfolk and Western plating shop. Each polishing or buffing lathe in this room has dust collector, which keeps dust from entering atmosphere.

Grit Blasting

The first step in finishing a newly fabricated railroad car is to blast clean all surfaces (Fig. 15). This is done by four operators in a totally enclosed Pangborn blast cleaning room. All four men stand on raised platforms and manipulate the blast guns, which spray out dry grit at high velocity, removing scale and dirt from the steel surfaces upon contact. The freight car moves in and out of the booth on tracks that run through the center of the booth. The floor of the booth is a grate, through which the used abrasives

Chemical Laboratory _____

REPORT OF ANALYSIS OF CHROMIUM PLATING SOLUTION
STANDARD COMPOSITION (slow speed)

Sample Received _____

Figures in Grams per Liter
unless otherwise shown

	Analysis	Standard Formula
Chromic Acid, CrO_3		250
Trivalent Chromium, Cr^{+++}		—
Sulfate Radical, SO_4^{--}		2.5
Ratio CrO_3/SO_4		100
Density, °Bé, @ 131° F		
Capacity		940 Gallons
Tank Size		

Recommended Additions

Chromic Acid, CrO_3 _____
Sulfuric Acid, H_2SO_4, 95%
Sp. Gr. 1.84, Reagent _____
Barium Carbonate, $BaCO_3$ _____

Recommendations and Notes _____

Revised 12 Feb. 55

Fig. 14—Form used by Norfolk and Western for laboratory report of plating solution analysis.

"The traveling spray booth has several advantages over conventional stationary installations when it comes to painting objects as large as a railroad car."

fall prior to collection and reuse. When the car leaves the booth, it is free of dirt and scale, ready to be spray painted.

Painting

Two types of organic finishing material are used in finishing coal cars. The first, an asphaltic-type material, covers the slope sheet on the front and rear of the cars, the surfaces beneath the car, and interior surfaces. The sides and other vertical surfaces are sprayed with a Du Pont "high build" paint that incorporates special corrosion-inhibiting ingredients. Both materials are applied directly over metal, without a primer.

The asphaltic-type material is applied with conventional spray painting equipment and allowed to air dry.

Steam Spraying

Two painters apply the black, direct-to-metal paint on the sides of the car and other vertical surfaces with steam spray guns. The painters take a ride while performing their task: they paint the cars from a double traveling spray booth (Figs. 16, 17).

The brick building where this is done is built like a tunnel. A track to run the cars in and out is in the center. An exhaust duct is overhead, and the U-shaped DeVilbiss traveling spray booth moves along tracks that parallel the railroad track, with the "U" upside down and a booth on each side of the car.

The spray gun operators ride in the traveling spray booths while the whole unit travels the length of the car. They stand on platforms that are electrically adjustable for height by merely pushing a button. Making three passes the length of the car, each at a different height, they are able to paint both sides.

The traveling spray booths are completely self-contained units. They have their own filtered air supply; their own lighting system, so that the operator can see his work easily; water washes on the inside of each booth to filter out paint solids. The spray apparatus itself and controls that allow the booth to travel at any speed up to 25 f.p.m. are in the booth. All controls for both lateral and vertical booth movement are within easy reach of the sprayer.

The traveling spray booth has several advantages over conventional stationary installations when it comes to painting objects as large as a railroad car. First, it limits spraying operations to an area 12 by 18 feet; therefore it requires less exhaust and takes up less floor space; by traveling, the booth can move into position to paint several cars, without having to move any of the cars; no scaffolding is necessary, since the operator stands on an electrically-driven adjustable platform; the adjustable platform has the further advantage of limiting sprayer fatigue by being adjustable to the ideal height for the man operating the spray gun.

The booths' self-contained exhaust systems feed into a stationary

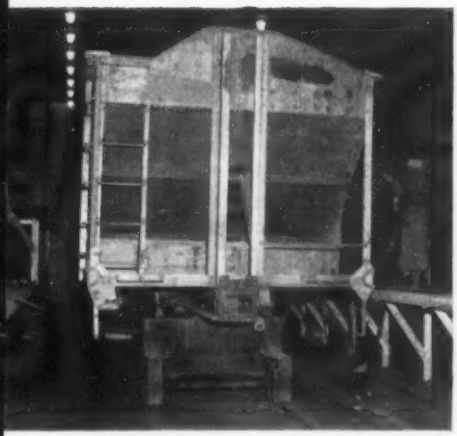


Fig. 15—Abrasive blasting a railroad coal car prior to painting. Four operators blast clean car. Used abrasive falls through grate.

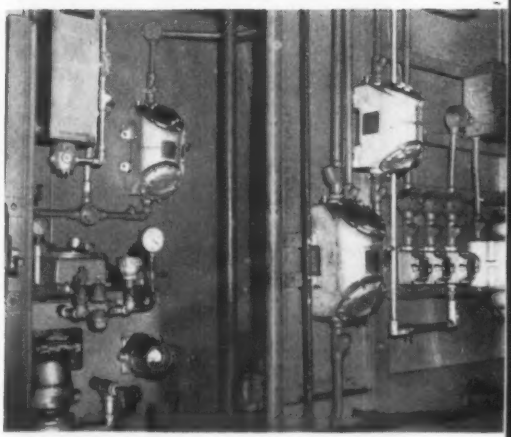


Fig. 17—Pantex steam generator, superheater, and controls are built into wall of traveling booth. Atomizing steam temperature: 420 F.

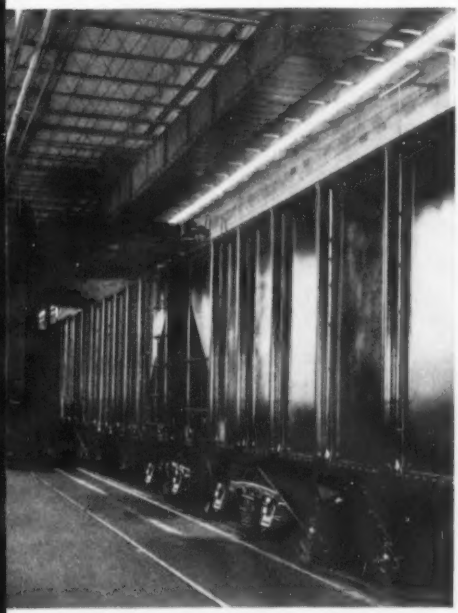


Fig. 16—Railroad cars are close-coupled in a continuous line for painting. Note the louvered exhaust duct just below the building roof.

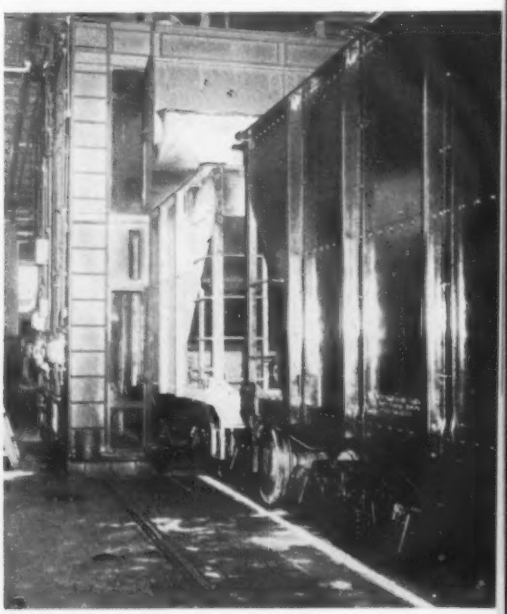


Fig. 18—Close-up of traveling steam spray booth. Operator can be seen inside. Traveling spray booth moves on tracks in the floor.

Fig. 19—Final step in painting the cars is to apply identification by stencilling with paint.

duct in the top of the building. They keep the area clean and free from fumes. Water exhausts are built into the sides of each booth. These remove solid paint particles from the exhaust air. The booth discharges its exhaust into an exhaust duct that runs the length of the building on the ceiling. The latter duct has cam-operated louvres that open and close as the booth moves. This duct, equipped with a separate exhaust fan, then discharges fumes outside the building.

The operators in the traveling spray booths use a DeVilbiss MBC-550 steam spray gun attached to a Pantex steam generator (Fig. 18) to apply paint by the Du Pont

Fig. 20 — Brand-new railroad cars, painted and ready to go, emerge from the building used to house steam spray painting operations. (Photographs courtesy Norfolk and Western Railway Co., Roanoke, Va. Figs. 2, 17 and 18 are PRODUCTS FINISHING Staff Photos.)

steam spray process. Essentially this process makes use of superheated steam rather than compressed air as the atomizing agent. The steam is fed into the gun at about 420 deg. F., and paint is fed in at about 35 p.s.i. pressure. As the operator triggers the gun, paint moves through the needle jet and is atomized by the steam. Unlike air, however, the steam immediately "dies"—it loses its velocity quickly as it cools and condenses, reducing overspray and "bounce-back" — an important advantage when spraying in such close quarters. The process works well here because the operator is close to the work and the paint need not travel far. N & W has found that the most important advantage of steam spray is that a heavier film can be obtained in a single application. N & W is getting 3 mils, which proves very satisfactory for corrosion resistance.

After being painted, the cars air dry. Then, as the final step in this finishing process, workers apply identification, stencilling on the various information required with a brush, using white paint (Fig. 19).

The cars emerge ready to go (Fig. 20), with an attractive black finish that has been found to give excellent service in the tough conditions under which railroad equipment must operate.

★ ★ ★

CELLULOSE ACETATE BUTYRATE IN PROTECTIVE COATINGS. A 75-page study of the chemistry and physical behavior of cellulose acetate butyrate in protective coatings has been published by **Eastman Chemical Products, Inc.,** subsidiary of the Eastman Kodak Company, Kingsport, Tenn. Copies are available on request.

The study represents a comprehensive summary of the laboratory and commercial experience gained by Eastman chemists in over 27 years of work with this cellulose ester. The study includes a thorough discussion of the chemical composition of the various types of cellulose acetate butyrate available; how the chemical modification of the cellulose affects the properties of the resulting product; and how to determine which particular cellulose ester can best serve in a specific application. Each of the available cellulose acetate butyrate types is discussed individually in terms of its general properties, useful solvents, plasticizers and other modifying materials. Typical uses are also given as a guide in the selection of the best ester for a given application.

Designed for use by those working in the field of protective coatings, the study contains numerous solubility and compatibility charts and tables and is thoroughly indexed for convenient reference.

★ ★ ★

INDUSTRIAL GLOVE CATALOG. Illustrated catalog sheets give complete specifications and factual information on the entire Pioneer line of liquid-proof industrial gloves. There is a detailed performance data sheet to guide the industrial glove buyer in selecting the best gloves for a particular industrial application. This sheet gives information on the actual performance of Pioneer industrial gloves when used with over 100 oils, acids, caustics and solvents.

The catalog is available by writing to **The Pioneer Rubber Company,** 296 Tiffin Rd., Willard, Ohio.

Electrochemistry

Part III

By FRED G. BRUNE
Quality Manager
Chrysler-Operated Naval
Industrial Reserve Aircraft Plant

Conductors: Liquid and Solid

A fundamental requirement in plating is that electricity must be carried. Two types of conductors take part in carrying the current: metallic solids, wherein no chemical effects are possible, and ionic solutions, where passage of current is accompanied by the movement of matter and chemical action at the electrodes.

Ions in solution have two functions: they carry current, and they discharge, or "plate out" at the electrodes. Which ion is to be discharged? Why one ion and not the other? This is determined by the solution composition and concentration, cathode surface, and what ions are in the area where the plating occurs.

Let's consider a metal immersed in a solution of its ions where no external current is applied. Many tests have proven that there is a difference in potential between the metal and the solution. This means there is a tendency for each atom on the surface of the metal to lose one or more electrons, depending upon its valence, and pass into the solution in the form of an ion. At the same time, the metal ions in solution will tend to obtain electrons and deposit on the metal surface. These two opposing actions, which occur simultaneously, do not normally occur at the same rate.

FRED G. BRUNE has been active in the plating industry for more than 25 years. He attended the University of Cincinnati as a cooperative student in the Department of Chemical and Metallurgical Engineering. He has been associated with the Lockland Div., Electric Auto-Lite Company and Marion Industries, Division of Motor Products Corporation. For the past several years, he has held a staff position at Chrysler Corporation.

Mr. Brune is a past-president of the Cincinnati Branch, American Electroplaters' Society. As a member of the Detroit Branch, he gave a most successful course in Electroplating last year. Mr. Brune is a member of the Electroplating Course Committee of the A. E. S.

and the Plater

When ions pass from the metal surface to the solution, the process is called *ionization;* when the opposite occurs—ions plate out on the metal surface—the process is called *discharge.*

If discharge takes place at a faster rate than ionization, more ions will leave the solution than those that enter. The difference in rate between the discharge and ionization processes causes the *difference in potential* between the metal and the solution. When discharge of ions takes place at the faster rate, the metal is positive with respect to the solution. The effect of the positive difference in potential is that the metal will act anodically, that is, ionization will speed up, while discharge is retarded. The net effect is that the two reactions will take place at the same rate and the system will be in equilibrium.

For any metal in a given solution, the potential at which the two processes take place at an equal rate is known as the *equilibrium potential.* Such potentials have been measured and the results are listed in handbooks and texts. Concentration of ions in solution changes the equilibrium potential.

The above explanation is based on the electrical properties of atoms and ions. There is also a chemical explanation for this same process. The phenomenon here is called *electrolytic solution pressure.* It is analagous to the evaporation of liquids. The tendency of a liquid to become a gas can be measured, and is called vapor pressure. Similarly, the chemist refers to the tendency of a metal to go into solution as its solution pressure. In the case of metals going into solution, the metal goes from its atomic to its

Author's Note: *This material was used in a lecture course in Electroplating, given as a part of the educational program of the Detroit Branch, A. E. S. The lectures were designed to explain in simple terms the principles of electrochemistry, and demonstrate to the plater the usefulness of these principles. During the course each student was given a copy of "Fundamentals of Electrochemistry and Electrodeposition," by S. Glasstone, as a source of more extensive explanation of electrochemical principles.*

"It (the Electromotive Series) is a valuable guide to the behavior of metals in solution."

ionic state; therefore, the name for this process has been designated as electrolytic solution pressure.

A man named Nernst developed the theory of electrolytic solution pressure about 69 years ago. As extracted from Nernst's writings: "In order to account for the activity of galvanic elements, we will subject the current-producing process to a closer examination; now in this process, nothing is obviously of more importance than the respective dissolving and precipitation of the metals at the electrode. And this at once leads to the following observation: the metals throughout are characterized in that they receive only positive charges; that is, they are able to go into solution only in the form of positive ions. Thus we see that the forces of an electrical nature play a very important part in these chemical processes. Let us therefore ascribe to each metal a certain solution pressure regarding the water; for every substance must have such a pressure as regards the selected solvent. The characteristic mark of a metal is that those molecules which they bring into solution by their solution pressure are charged in an electropositive way. Therefore, their solution pressure is suitably called electrolytic."

This man did not know the relationship between an atom and an ion; he knew little about the electrical charges in a solution; yet he gave a good explanation of the situation, one that is a useful concept even today. The explanation is criticized today only for the fact that it does not express physical reality.

As mentioned previously, the equilibrium potentials of most metals have been measured, and are listed as the *Standard Potential*. Usually these numbers are referred to hydrogen as a reference point. Several of the more common metals are listed in Table I.

Today the table of Standard Potentials is most commonly referred to as the *Electromotive Series*. But it may also be regarded as a displacement series. A higher position in the table indicates greater tendency to force ions into solution, and thus the ability to replace metals lower in the table from a solution. It is a valuable guide to the behavior of metals in solution.

As a concrete example, if a clean piece of zinc is immersed in a solution of copper sulfate, a film or layer of copper forms on the surface of the zinc. This means that the zinc, with a potential of -0.76 volts has a greater tendency to form ions in the solution than does the copper, which has a potential of 0.34 volts. Actually, the potential difference between zinc and

Table I

STANDARD ELECTRODE POTENTIALS	
Sodium	—2.71 volts
Zinc	—0.76
Nickel	—0.23
Hydrogen	0.00
Copper (++)	0.34
Copper (+)	0.52
Silver	0.80

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copper is 0.76 plus 0.34, or a total of 1.10 volts. In its simplest form, then, we can view this as meaning that the metallic zinc atom takes an electric charge from the copper ion and becomes a zinc ion in solution; meanwhile, the copper ions lose their electrons to become atoms and deposit on the zinc.

From this sort of reaction, it is easy to see why the Electromotive Series can be regarded as a *Displacement Series*. The farther apart metals are in the table (and the greater the difference in potential) the more complete will be the replacement action. As further evidence of the table's accuracy, it can be noted that if we place a clean piece of copper in a solution of zinc sulfate, we find that no replacement action will take place.

The Electromotive Series and the electrochemical reactions involving replacement of one metal by another are important in producing pure anode materials for use in plating. They are also important to platers who use silver and gold plating solutions. These reactions are useful in precipitating the gold and silver from rinse water.

"Alright now, Jones, what's YOUR problem?"

The Electromotive Series also explains the reason for copper plating zinc die castings before nickel plating. The zinc is more negative than nickel and can therefore displace nickel from its solution. This would result in stained, non-adherent deposits of metallic nickel being formed as soon as the work is placed into the plating solution. (It should be noted that special baths have been developed for nickel plating directly on zinc. Such solutions contain large amounts of sodium sulfate. The sodium, which is more negative than zinc, prevents the zinc from replacing the nickel. For other reasons, however, such as brightness and throwing power, this process is not generally used.) Since copper is more positive than nickel, there is no tendency for an immersion deposit of nickel to form on the copper plate, which now covers the zinc die casting. But there is a greater potential difference between zinc and copper than between zinc and nickel; therefore, how can copper plating be used, when we have just seen that zinc will replace copper from a copper sulfate solu-

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Thanks to the established protective quality of the Kadmoid finish used on these tire rims, the Metal Products Division, of The Goodyear Tire and Rubber Company, Inc., Akron, stores acres of rims under acres of sky . . . in all kinds of weather. No costly building is needed to guard this vast warehousing area against snow, sleet, rain or sun.

Another vitally important point . . . field records prove that the Kadmoid baking finish far out-performs the zinc plating previously used, keeps Goodyear rims the world over looking better, longer . . . and at far less cost.

Such unusual savings are typical with Kadmoid . . . because Kadmoid is extremely tough and durable, and offers peak resistance to salt and other chemicals. It's ideal for use where maximum protection is essential.

May we tell you more?

Kadmoid is the finish Goodyear advertises as Bond-a-Coat.

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tion? The answer is that a cyanide copper plating solution is used, in which the concentration of copper ions is kept low. With such a low concentration, the zinc cannot take electrons from the copper ion, and no immersion deposit occurs.

When a high concentration of copper ions is used, a copper strike must be used first. In a copper strike bath, the concentration of hydrogen ion is greater than the copper ion concentration, so that more hydrogen is plated at the cathode as a gas than is copper metal. Proper use of a copper strike bath and its control is one of the most underestimated factors in producing a quality plated zinc die casting.

The use of silver strikes prior to silver plating is again a case of using a bath with a low concentration of metal ions, so that an immersion deposit is not produced. An immersion deposit is usually rough and non-adherent, so that thicker deposits over such a coating peel off easily.

The only commercial use of immersion plating is on low-cost items that are coated with films of gold or silver and then lacquered. The thickness of such deposits is limited, since plating ceases as soon as the surface is covered.

Displacement plating is often dependent upon a clean surface. For example, aluminum has a negative potential, and should displace noble metals from their solutions quite readily. But in practice, aluminum is covered with a thin film of oxides, which, in effect, makes the metal more noble. No displacement occurs.

Service Determines Correct Coating for Fasteners

Service experience is the best guide to selecting the proper metallic coating for fasteners, according to engineers at Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, N. Y.

The RB&W technicians point out that salt spray testing of various metallic coatings doesn't always give a true picture, because accelerated test results are not always borne out in actual service. That's because the tests favor the coatings which can endure continuous moisture and salt atmosphere, whereas some coatings do better under the normal intermittent dry and wet conditions of weathering.

RB&W has developed a "scale" of suitability of various coatings for fasteners, based on experience with thousands of applications. Here are some recommendations:

1. Hot galvanizing provides the coating with greatest endurance under most conditions, RB&W has found. It is not the best for highly prestressed fasteners, such as high tensile bolts (ASTM A-325) and other high strength fasteners. When preload tension brings the base metal into its elastic range, as it should, the hot galvanized coating may flake or crack.

2. Electrodeposited zinc is the most practical coating next to hot galvanized. It provides good appearance, controlled tolerance of threads, and ability to take high bolt tensions without flaking or cracking.

Now! HIGH-GLOSS FINISHES
that stay new longer...

After 24 months—new Isophthalic-based refinishing enamel had 85% of original gloss

The above automobile, repainted with an Isophthalic-based enamel, has undergone weather testing for the past 24 months. After repainting, the car was not waxed—has never been garaged or polished and was washed only occasionally. Recent Photovolt gloss meter readings show the enamel has 85% of its initial gloss. There is no evidence of film failure by cracking or checking.

This and other tests prove Isophthalic refinishing enamels have a wide margin of superiority in hardness, durability and gloss retention over conventional commercial-grade enamels.

If you're looking for longer life and better performance in automotive refinishing enamels, farm implement enamels or industrial enamels—it will benefit you to inquire about this important new Oronite raw material. Write Oronite directly or ask your paint supplier about the new Isophthalic-based enamels.

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*T.M.

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3. Cadmium plate stands up well where salt atmospheres predominate. Because it isn't suitable for contact with edibles, however, it is ruled out for products such as kitchen appliances.

4. Rust-preventing characteristics of black oxide coatings usually prove satisfactory for general-purpose applications.

5. Phosphate coatings offer a limited degree of protection and provide a good base for paint, RB & W technicians have found.

6. Chromium plating over copper should be considered more for its appearance than for the protection it provides for the basis metal.

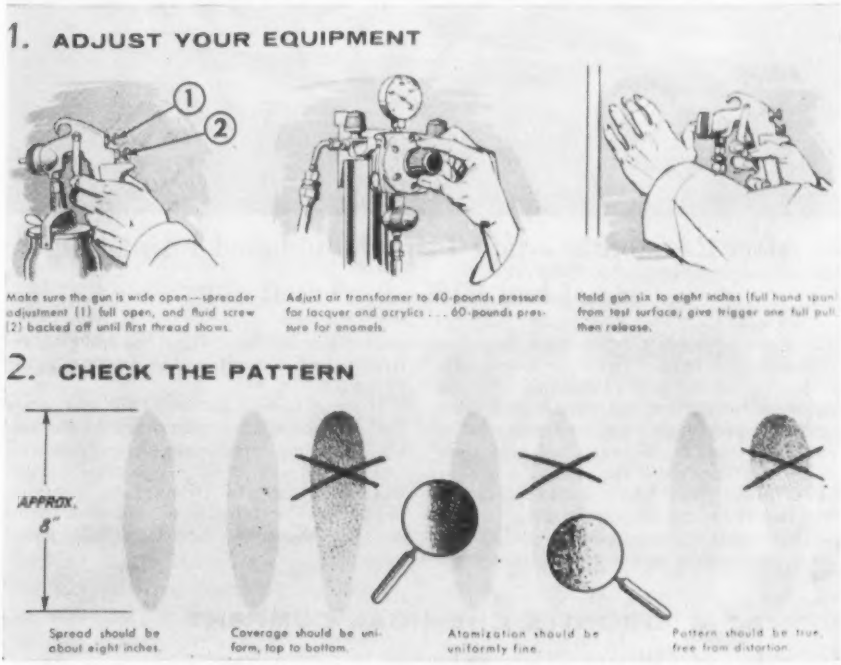
How to Check Spray Guns for Efficiency

To check the efficiency of a spray gun here's a simple test advocated by engineers of The DeVilbiss Company.

Open the gun wide by turning the spreader adjustment full open and backing off the fluid screw until the first thread shows.

Adjust the air transformer to 40 pounds pressure for lacquer and acrylics or 60 pounds pressure for enamels.

Hold the gun six to eight inches from the test surface, give trigger one full pull, then release.


1. ADJUST YOUR EQUIPMENT
1
2
Make sure the gun is wide open—spreader adjustment (1) full open, and fluid screw (2) backed off until first thread shows.
Adjust air transformer to 40-pounds pressure for lacquer and acrylics . . . 60-pounds pressure for enamels.
Hold gun six to eight inches (full hand span) from test surface; give trigger one full pull, then release.
2. CHECK THE PATTERN
APPROX. 8"
Spread should be about eight inches.
Coverage should be uniform, top to bottom.
Atomization should be uniformly fine.
Pattern should be true, free from distortion.

Step-by-step drawings above show how to check and evaluate spray-painting equipment for efficient operation. (Photo courtesy the DeVilbiss Company, Toledo 1, Ohio.)

For more data on advertisement on opposite page, circle 327 on Postpaid Card ——→

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PERFORMANCE—

"Execution with technical skill—effective operation."

(Webster's New International Dictionary)

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Check the pattern to be sure that (1) coverage is uniform from top to bottom, (2) that atomization is uniformly fine, and (3) that the pattern is true and free from distortion.

If any of these fail to check, the spray gun is defective, and can result in a waste of material, time and effort, as well as poorer quality jobs.

★ ★ ★

One Way To Get Additional Life from Abrasive Belts

One user of abrasive belts reports that a substantial increase in the useful life of the belts is realized merely by keeping the belts warm in the storage room. Fairly narrow belts are used, and these are hung on pegs on the storage room wall. A heat lamp is mounted so that it shines on the belts. That much heat is said to be enough to soften the belts slightly so that they do not break or lose emery when they are first mounted on the polishing stands.

In use, the belts tend to "load" with zinc and polishing grease or compound. An occasional cleaning with kerosene will remove the zinc and other dirt, and make it possible to use belts longer without loss of cutting efficiency.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

45th Annual Convention
American Electroplaters' Society
May 19-22, Cincinnati, Ohio

. . . SOLUTION TO A FINISHING PROBLEM

ELECTRO POLISH
production pieces faster—better with
Electro-Glo SOLUTIONS

- ✓ Polishes—Deburrs—Levels
- ✓ Saves Time—Labor Costs
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- ✓ Sold as a Concentrate
- ✓ Used with Standard Plating Equipment

Electro-Glo electropolishing is the modern, economical finishing method in which a fractional amount of metal is removed rather than deposited as in plating. Electro-Glo comes to you as a concentrate, and you purchase the balance of the solution locally. It is used in conventional plating equipment.

Electro-Glo does a multiple job. Deburring, leveling, and polishing take place simultaneously. Any degree of brightness is easily obtained. Electro-Glo concentrates process Copper Alloys, Stainless Steel, Carbon Steel, and less common metals and alloys.

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YOUR OVERHEAD IS OVER HERE

The overspray in your water curtain is a cause of overhead cost. While the overspray cannot be eliminated, the cost of removing deactivated paint from the spray booth tank and the water circulating system can be.

Periodic filtration of paint spray booth wash water prevents deactivated paint from settling to the bottom of the tank by removing the paint matte while it is floating. Recirculation of the paint in the system is prevented and water nozzles remain foul-free. Such maintenance costs are eliminated.

Only Delpark offers filtration for paint spray booth wash water. A Delpark field engineer will be glad to show you how you can save on operating and maintenance costs.

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PAINT SPRAY BOOTH WATER FILTERS

. . . FIRST in Filtration Advancement

Backed by more than 40 years experience in Industrial Filtration

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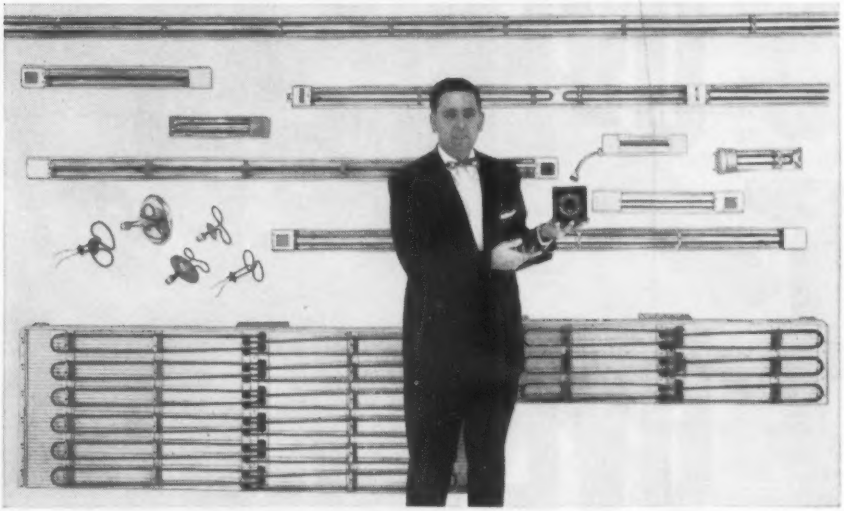
℞ Time-saving Far-Infrared heat



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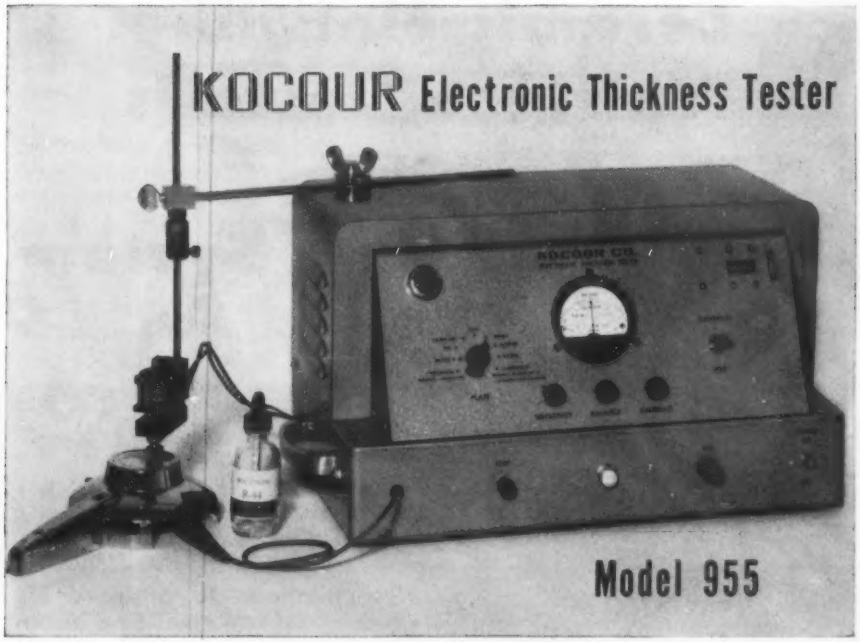

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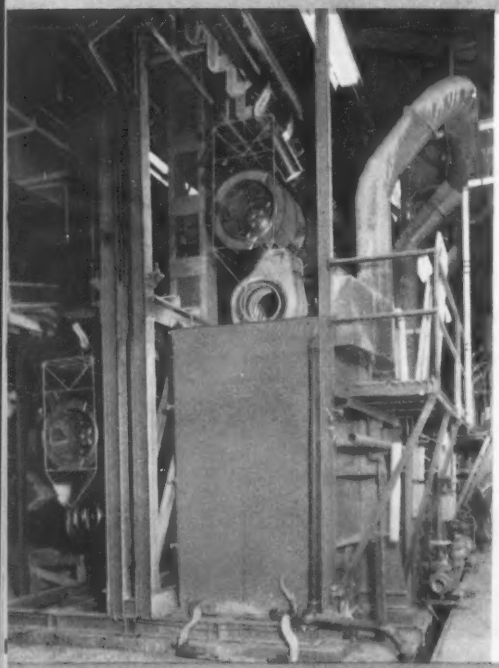
Ceramic Finishing: Whirlpool Installs Continuously Recirculating System

Appliance maker puts in system with objective of applying porcelain economically and producing a first-quality product . . .



New methods to improve his product are important to a manufacturer of household appliances. If he is to gain an advantage or even hold his own in competing with other manufacturers, he must be quick to adopt improved manufacturing processes.

As most dealers will tell him, the appearance of his product plays an important part in its saleability. And the end appearance of any appliance is greatly affected by the methods and equipment used to apply the finish.

It was with this thought in mind that officials of Whirlpool Corpora-

Fig. 1 — Suspended from overhead hooks, appliance parts (top, center) enter first phase of three-stage pickling machine. Overhead conveyor dips parts in each of the three baths. Pickling operation etches metal to improve adhesion of ground coat porcelain.

tion, St. Joseph, Mich., undertook design of a new plant to produce washers, dryers and washer-dryer combinations.

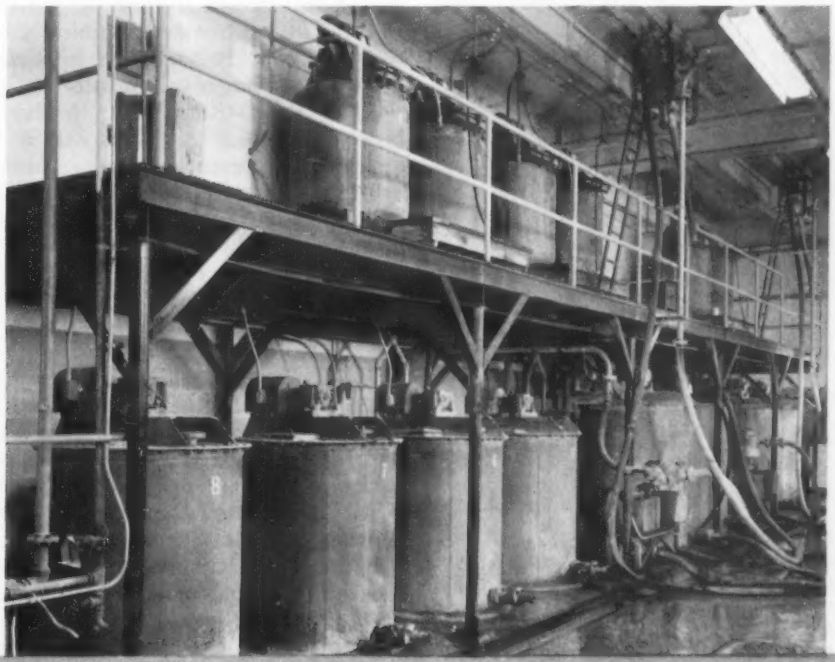
The new plant features the latest in finishing equipment, including a circulating system for ceramic materials, and automatic and manual spray finishing equipment. In installing this equipment, Whirlpool sought to give their products the finest finish in the industry.

"In planning the plant," according to Charles Cook, Whirlpool ceramic engineer, "our prime concern was the development of a system that would apply porcelain economically and at the same time turn out a top-quality product."

The spray painting equipment in this plant was planned and installed by Binks Manufacturing Co., Chicago, Ill.

Six air-operated circulating pumps form the heart of the system. Pumping directly from six 250-gallon material handling tanks (Fig. 2), the units ensure a uniform delivery of porcelain enamel to the various automatic and manual spray guns. Four of these tanks contain the initial coating of blue-gray porcelain, the "ground" coat, while the other two furnish a final coating.

Fig. 2—Six 250-gallon pressure tanks, each equipped with a circulating pump, provide a constant, uniform supply of porcelain enamel to the automatic and manual spray guns. Four of the tanks supply the ground coat, two supply the white cover coat.



". . . the conveyor first carries the parts through a pickling treatment in a three-stage machine . . ."

"The purpose of applying a ceramic finish on the various parts is to provide a protective coating and produce an attractive appearance," Mr. Cook explained.

The finishing operation begins at Whirlpool after the parts are delivered from various fabricating points throughout the company's other four plants. Workers unload the metal pieces from small skids, and attach them to specially designed hooks suspended from an overhead conveyor.

To clean the metal, the conveyor first carries the pieces through an automatic pickling treatment (Fig. 1) in a three-stage machine. As the parts travel over the first of a series of 10-foot-deep tanks, the conveyor is stopped. The pieces are lowered automatically and immersed in a hot cleaner bath. This removes any dirt or oil that may have accumulated during fabrication.

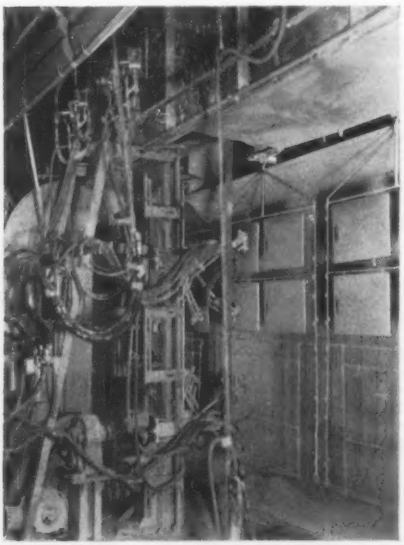


Fig. 3—Eight automatic spray guns mounted on a reciprocating machine automatically apply porcelain to one side of panels. Duplicate setup is used to spray other side. Machine makes 36-inch stroke, covers entire side of panel in one up-and-down cycle.

After the parts are lifted out of this bath, the conveyor moves to the next tank, which contains acid. This solution removes rust and etches the metal. In the next phase of this operation, the parts are immersed in an acidified nickel solution to produce a thin nickel coating. Any impurities or acid salts remaining on the surface of the metal are neutralized with a hot alkaline solution.

After this automatic cycle has been completed, the parts are removed from the pickling hooks and transferred to another overhead conveyor. Large pieces, such as tumblers, drums, or backing plates, which cannot be sprayed with automatic equipment, are sent to a flow coating machine. Smaller parts are carried on the conveyor to a 40-foot dry-type spray booth at which three operations are performed. Ground coat enamel is applied in both the flow coat machine and the spray booth.

All parts are given an initial coating of ground coat porcelain. This ground coat porcelain ensures a better bond for the second or "cover" coating. External parts, such as lids and tops, as well as side, front

"The parts are spaced on the conveyor so that they will receive a thorough coating in one cycle . . ."

and door panels, are also finished with a white enamel.

As the parts enter the continuous 40-foot booth, eight spray guns, mounted on an automatic vertical reciprocating machine (Fig. 3), apply an initial coating to one side of the metal. The parts are spaced on the conveyor so that they will receive a thorough coating in one cycle of the automatic spray gun.

The guns of the reciprocating machine move up and down through a 36-inch stroke. They automatically shut off at the top and bottom of each stroke to reduce material waste. By co-ordinating the forward speed of the conveyor with the vertical motion of the spray guns, complete and uniform coverage is attained in a single cycle.

Because of the abrasive nature of the frit, tungsten carbide inserts are used in places where the abrasive material might cause damage to the spray guns. To avoid corrosion, stainless steel nozzles are used on all the guns.

Whirlpool combines 45 pounds of air pressure with 8 pounds of material pressure in the guns to produce proper atomization of the slip. Fluid-pressure and air-pressure regulators maintain these pressures. Oil and water extractors eliminate impurities from the air line.

The parts, still on the endless conveyor, are then carried to the next operation in the booth. Here the opposite sides of the panels are sprayed. A reciprocating machine makes the application. Two workers using manual spray guns complete the operation (Fig. 4) at the last station in the booth by touching up corners and thinly coated spots.

Leaving this booth, the parts make a 180-degree turn and move up to a second-floor oven. This 100-foot gas-fired oven dries the parts for 20 minutes at 300 deg. F. The heat of this oven produces a dry film of porcelain enamel. To convert this film to a "glass," parts must be fired at high temperatures.

"Before firing, an inspection is made to be sure parts have uniform coatings. At the same time, the parts

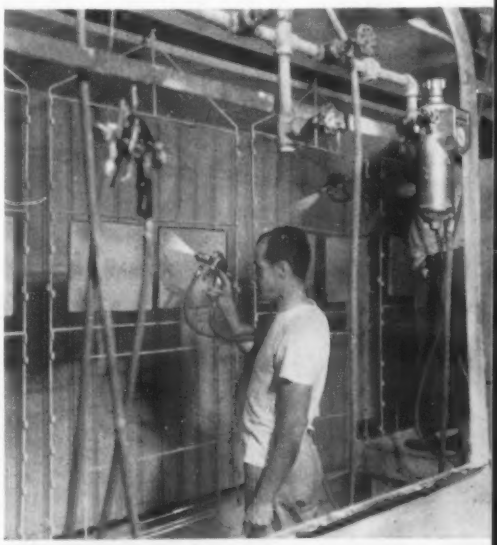


Fig. 4 — Painters perform touch-up work manually in this booth. Oil and water extractors (foreground), equipped with special spiral filters, eliminate foreign material in the air lines. After spraying, parts are carried to a second-floor dry-off oven.

are transferred to the furnace conveyor, and hung on alloy hooks that will withstand high temperature," Mr. Cook explained.

A conveyor carries the parts through a 60-foot radiant tube-type furnace. Reaching a "hot zone" in the furnace, the milled porcelain is fused at 1540 deg. F. A dark blue-gray finish results from this 20-minute firing.

Inspectors check the finish for flaws (Fig. 5) and load the parts on another conveyor. Rejects are sent to the initial material application point and refinished. All parts which pass inspection are carried by conveyor to the final phase of the finishing process.

Here workers unload the parts and wipe them. This removes dirt. The parts are again suspended from overhead hooks, on a conveyor, which carries them to a second 40-foot dry type spray booth. Application of the white porcelain enamel, utilizing similar equipment, is carried out in the same manner as the ground-coat application.

After receiving a manual touch-up in the final section of this spray booth, the parts are carried to another separate second-floor oven. In this oven, the white porcelain enamel is dried to a white film in 20 minutes at 300 deg. F.

Prior to entering the final "firing" furnace, the panels move through a brushing booth where the finish coat is brushed from holes and critical areas. Another worker, using a hand spray gun, applies touch-up coatings to areas not properly coated.

The white porcelain enamel is fired to produce the final hard white ceramic finish. Emerging from the furnace, the parts are inspected and removed from the hooks and distributed onto skids to various departments for assembly.

This three-hour operation is completed with a minimum of delay.

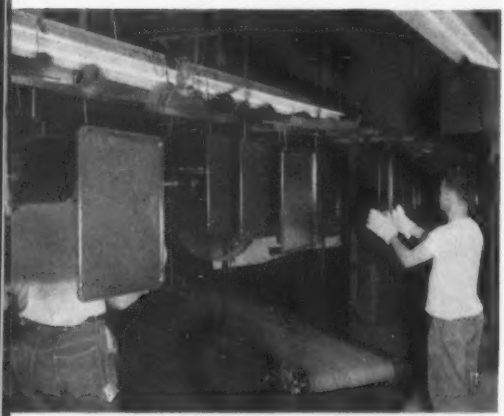


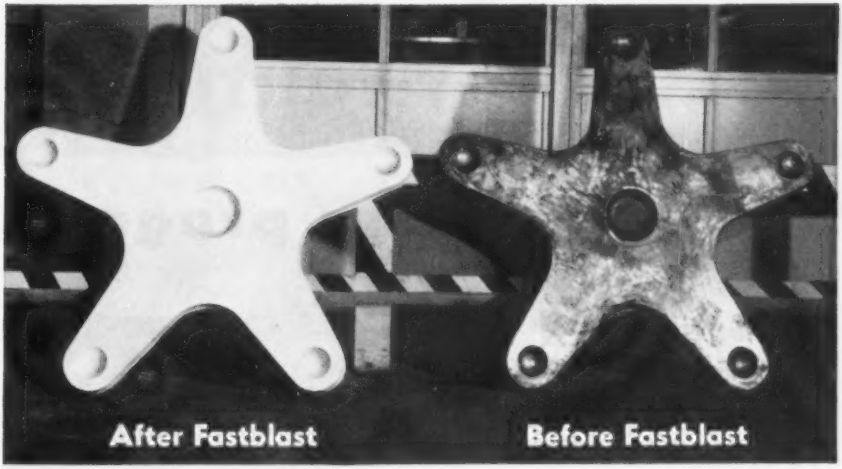
Fig. 5 — Washer lids coming out of gas-heated furnace, where ground coat has been fired at 1500 deg. F. Workers inspect pieces, then unload them from the hooks. Parts then go to final automatic spray painting booth for white "cover coat." (Photographs courtesy Binks Manufacturing Company, Chicago, Ill.)

★ ★ ★

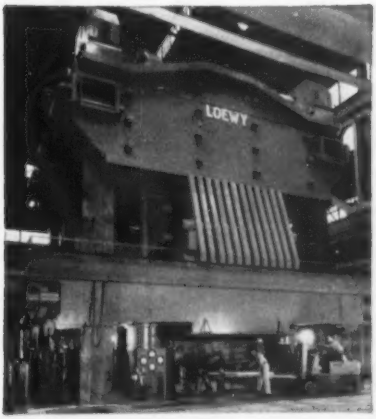
Hot Dip Galvanizing 1956. A record of the proceedings of the Fourth International Conference on hot dip galvanizing. Published by the Zinc Development Association, 34 Berkeley Square, London, W.I.

The book includes eleven papers contributed by authors from five countries plus discussions and later contributions relating to each subject.

Clean Forgings Fast with Exolon Fastblast

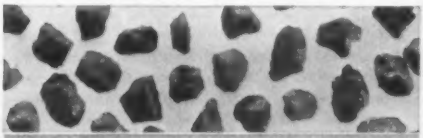


Wyman-Gordon Company cleans Helicopter Hub Rotor Magnesium Forgings by pressure blasting with Fastblast



Above: Forgings were produced on this 50,000 ton 10 story high press at Wyman-Gordon — USAF North Grafton, Mass.

These forgings covered with grease and graphite are cleaned quickly by air pressure blasting. Exolon Fastblast, a strong sharp clean 100% new aluminum oxide blasting grain is used. It is free from weak particles and "lazy" fines — breaks down slowly — reclaim value is high. Write for literature.



Above: Photomicrograph shows tough, hard grains of Fastblast.

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Page 56

SPOTLIGHTING finishing progress

Salt Spray Corrosion Tests

Dr. Nelson F. Murphy

The salt spray test has been criticized as a comparative or service test. M. S. Frant of the Research Division of A M P Inc., Harrisburg, Pa., reported to the Buffalo meeting of the Electrochemical Society on the results of tests made on barrel-plated specimens. The tests were made in various cabinets located in several laboratories scattered throughout the country.

The specimens were tin plate on copper. The area of the copper exposed by deterioration of the tin plate was evaluated by a colorimetric measurement of a solution of one-molar ammonium persulfate

DR. NELSON F. MURPHY was graduated from the University of Cincinnati, Cincinnati, Ohio, in 1929 with a B.S. degree in Chemical Engineering. He did his post graduate study at Cornell University, Ithaca, New York, receiving a Ph.D. degree in 1934.

Dr. Murphy was associated with General Chemical Co., New York City, from 1934 to 1939 as a research chemist and research group leader. He then became assistant professor of chemical engineering at Syracuse University, Syracuse, New York. During this period he also performed consulting work in a number of fields,—electroplating and corrosion control and prevention being two of his interests.

Since 1947 Dr. Murphy has been research professor of chemical engineering at Virginia Polytechnic Institute, Blacksburg, Virginia. In this capacity he directs research activities and teaches graduate students. He also carries on an active consulting practice.

The author of some 30-odd technical publications, Dr. Murphy has also presented papers before a number of technical societies and groups, including the Electrochemical Society and the American Electroplaters' Society.

Dr. Murphy is a member of Amerian Institute of Chemical Engineers, American Chemical Society, American Electroplaters' Society (past president of Syracuse Branch, now first vice president of the Blue Ridge Branch), American Society for Engineering Education, American Society for Metals, The Electrochemical Society, American Association of University Professors, Sigma Xi, Phi Lambda Upsilon, Tau Beta Pi, Virginia Academy of Science, Instrument Society of America.

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4. Is it resistant to highly corrosive salts?	☐	☐
5. Will it resist alkalis, including 50% caustic soda?	☐	☐
6. Is it insoluble in aliphatic alcohols, glycol and glycerine?	☐	☐
7. Is it impervious to diesel oil, sour crude, aliphatic petroleum hydrocarbons?	☐	☐
8. Is it non-toxic in food and beverage service?	☐	☐
9. Is it also supplied with T-ribbed back, for casting into place in new concrete tanks?	☐	☐
10. Are expert applicators available in all major cities?	☐	☐

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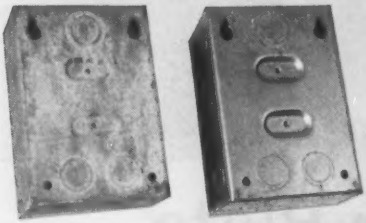

Both switch boxes treated with aluminum synthetic. Stantite Spraying Primer was used on box at right. Both *were exposed to salt spray test for 200 hours. The results speak for themselves!*

Stantite Spraying Wash Primer is a two-package, new type rust inhibiting primer that improves the quality of *any* topcoat, air-dried or baked. The formula is concentrated to minimize the settling of zinc chromate. Fast drying . . . exceptional adhesion to ferrous, non-ferrous metals and glass. Prevents "rust creep". Ideal base coat for lacquers, vinyls, alkyds, ureas, melamines, enamels, japans.

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to which was added an equal volume of concentrated ammonium hydroxide. Since this solution attacks copper linearly, the area exposed was proportional to the color developed in a given time. The amount of copper dissolved per unit time in this test was called the "porosity index."

When, for any given salt spray cabinet, the porosity index was plotted against the time of exposure on log-log paper a straight line with a positive slope of 2 resulted. To compare the results from different localities, the slope of the curve and the porosity index at 150 hours were tabulated.

Comparison of the results obtained at different locations showed that the size of spray box was not significant. Variations in the results seemed to come about from differences in (1) operation of the box, (2) treatment of specimen, (3) location of specimen in box and (4) differences in construction (baffles, etc.) in the box.

Comparison of results from 12 locations resulted in variation in the slope of the curve from 0.9 to 2.7 and in the porosity index at 150 hours of 11 to 70. This was translated into a range of 60 to 140 hours to "failure."

This method of plotting results of corrosion experiments should permit study and comparison of other spray-testing techniques (acetic acid, water fog, or peroxide-salt solutions), and also might be applied to actual exposure tests to de-

termine if the corrosion mechanism in the field and in the accelerated test are the same. Consideration should also be given to the possibility of using this technique for comparison of the protective value of organic coatings.

★ ★ ★

Soldering Stainless Steel

Stainless steel can be soldered if correct procedures are used. The key to a dependable joint is proper surface preparation, correct choice of flux, and joint design.*

Obviously a clean surface is essential, and roughening of smooth surfaces will increase adhesion. For 50-50 solder, Republic Steel Corporation recommends adding one teaspoonful of glycerine to a cup of commercial stainless steel soldering flux to help flux wet steel surface.

The most popular solder for stainless steel is 50-50, tin-lead mixture, although 60-70 is also used. Thorough heating of the joint is necessary. For a plain lap-joint, the edges should be roughened, tinned and then sweated together. Other types of joints may be readily made. It is preferable to tin the edges before bending.

Soldered joints in stainless steel are, obviously, not as strong as the base metal. If strength of joint is required, then, in addition to soldering, riveting, spot welding or lock seaming may be used.

*Inco Nickel Topics *10*, No. 9, p. 8, (1957).

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After the joint has been made, the excess flux and solder should be removed from the surface. To prevent corrosion of the steel, neutralizing the acid flux with a wash of ten per cent sodium carbonate, followed by a water rinse is recommended. Scraping tools for solder removal should be of stainless steel to prevent surface contamination with particles of less corrosion resistant metals.

★ ★ ★

Chromate Films on Zinc

F. R. Nagley, K. L. Procter and H. G. Katz reported to the Electrochemical Society that tests had been made on ten commercial chromate treatments of zinc plated steel. These coatings were evaluated by exposure to marine atmosphere at Kure Beach and by salt spray test. The presence of hexavalent chromium ceased to be a factor in prevention of corrosion after six months. The clear treatment (no hexavalent chromium) failed rapidly. Apparently the thickness of the chromate film has only a slight, but significant, effect on the length of time of protection.

One significant observation

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was that the thickness of the chromate treated zinc plate was related to the corrosion protection. Chromate films on zinc coatings of less than 0.0002 inch were not as effective as the same film on thicker coatings, and this thickness was recommended as the minimum for chromate treatment.

★ ★ ★

Non-Electrolytic Nickel Coatings

Nickel phosphorous alloys can be plated onto steel from a hot solution of nickel chloride and sodium hypophosphite by immersion. The formation of the deposit takes place at a rate of 0.001 inch per hour and the practical limit is about 0.005 inch. Since this is a chemical reduction process, the throwing power of such a solution is infinite and since the process requires no electric current the size of the piece being coated is not limited by any considerations of current density. The temperature at which the process is carried out is 210 deg. F.

At a recent corrosion conference at Wrightsville Beach, North Carolina, the nickel coatings from this process were reported* to have higher corrosion resistance than electroplated nickel. The hardness of the coating is reported to be 48

*"Alloy Coating Gains Momentum," Chem. and Eng. News, p. 68, October 14, 1957.

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For more data on advertisement on opposite page, circle 338 on Postpaid Card →

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Production rate climbed sharply when the new "81-Coat" abrasive belts were used for this job. It's removing the gates from sand-cast aluminum parts used in the automatic feeder of a punch press. A 24-X 81-Coat Resinall Metalite Belt was found best, with lubrication by light grease stick. The same advantages of increased production, and longer life, are found with discs as well as belts . . . on stainless steel, brass, and other metals.

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New "81-Coat" abrasive belts with Spur Action have rougher, tougher cutting points for faster stock removal . . . stronger resin bond for greater heat endurance. Try them on *your* production problem—at your plant or at one of our 17 Abrasive Tech Methods Rooms: Atlanta, Boston, Chicago, Cincinnati, Cleveland, Detroit, Grand Rapids, High Point, Indianapolis, Los Angeles, Teterboro, Camden, San Francisco, Seattle, St. Louis, and Brantford, Canada. Main Office and plant: Troy, N.Y. For Export, Norton Behr-Manning Overseas, Inc., Troy, N.Y., U.S.A.

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on the Rockwell C scale. Some cracking may occur when the plated pieces are bent through 180 degrees. More ductile coatings can be obtained by longer heat treatment, and harder coatings by shorter heat treatments.

The coatings are said to be resistant to 50 to 74 per cent sodium hydroxide, carbon disulfide, ethylene oxide, and ammonia solutions.

There are two processes for the formation of this nickel-phosphorous coating. One yields an alloy containing 9 per cent phosphorous, the other an alloy of 2 per cent phosphorous. For most cases these two alloy coatings behave alike, so that choice of one or the other coating is a question of economics for the individual piece.

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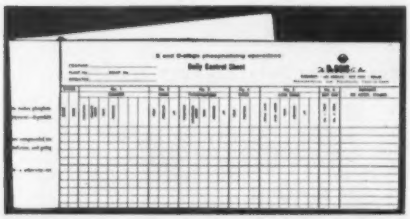
PHOSPHATIZING CONTROL BOOKLET. A daily-control booklet for three- and five-stage phosphatizing operations may be obtained by writing on company letterhead to the **DuBois Co., Inc.,** Industrial Division, Cincinnati 3, Ohio.

The booklet contains forms for

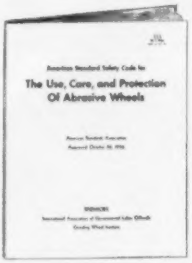


record keeping for a complete month of phosphatizing operational checks.

This booklet makes it easy for the user to keep a record of titration, compound added to tanks, temperatures, and so on.

★ ★ ★

AMERICAN STANDARD SAFETY CODE FOR THE USE, CARE AND PROTECTION OF ABRASIVE WHEELS. New revised Code contains many innovations which make it more usable and understandable to the consumers of abrasive wheels.



The many new features include material on the revolving cup guard, the depressed center wheel and new maximum speed tables for mounted wheels.

Copies of the revised Code may be obtained free of charge by writing (on company letterhead) to the **Grinding Wheel Institute,** 2130 Keith Building, Cleveland 15, Ohio.

★ ★ ★

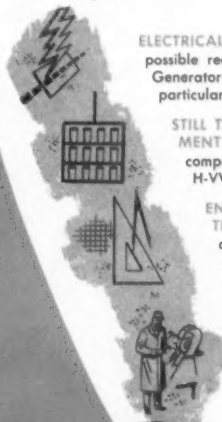
VANDERLOY, THE ELECTROLYTIC IRON. A bulletin describing the uses and properties of Vanderloy, the electrolytic iron, is available from the **Van der Horst Corporation,** Olean, New York.

Already widely used in many industrial applications, Vanderloy is 99.9 per cent pure iron — comparable to low carbon steel. Some of the uses to which it has been put by Van der Horst include the following: to reclaim worn machine parts; to provide a magnetic surface on non-magnetic metals; to reclaim mis-machined parts; to protect soft or perishable metals and alloys—copper, aluminum, etc.; to electroform molds and dies; to reinforce fragile metal forms; to provide a surface with a high affinity for tinning.

For more data on advertisement on opposite page, circle 339 on Postpaid Card ——→

Aluminum
anodizing, buffing and cleaning

No matter what your aluminum finishing problem or need, you'll find the answer at H-VW-M . . . because it is the one company combining a complete engineering service with a complete line of equipment and supplies!



ELECTRICAL EQUIPMENT — Want the best possible recommendation of a Rectifier . . . Generator . . . or Control Equipment for your particular operations? Page 2 tells how to get it.

STILL TANK OR FULL AUTOMATIC EQUIPMENT — Whatever your need — from a single component to a complete, integrated system — H-VW-M supplies it . . . Page 3.

ENGINEERING SERVICE AND INSTALLATION — H-VW-M engineers and technicians are anodizing equipment specialists, with years of experience. Page 3 tells why these H-VW-M services mean greater efficiency and savings in your plant.

ALUMINUM FINISHING SUPPLIES — Page 4 shows how H-VW-M research has resulted in new compounds, improved buffs and cleaners to make aluminum finishing easier, better.

HANSON-VAN WINKLE-MUNNING COMPANY

MATAWAN, NEW JERSEY

Manufacturers of a complete line of electroplating and polishing processes, equipment and supplies

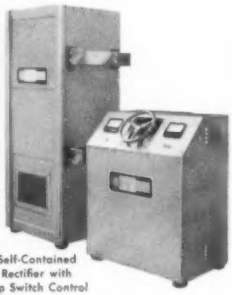
Plants: Matawan, New Jersey • Grand Rapids, Michigan

Sales Offices: Anderson (Ind.) • Baltimore • Beloit (Wisc.) • Bridgeport • Chicago Cleveland • Dayton • Detroit • Grand Rapids • Los Angeles • Louisville • Matawan Milwaukee • New York • Philadelphia • Pittsburgh • Plainfield (N. J.) • Rochester St. Louis • West Springfield (Mass.) • Utica • Wallingford (Conn.)

These H-VW-M Anodizing and Finishing to New Savings, New Efficiency, New

ELECTRICAL EQUIPMENT

H-VW-M is the only manufacturer of both Germanium and Selenium Rectifiers *and* low voltage, direct current Motor Generator Sets for the metal finishing industry. This thorough experience in every phase of low voltage power generation and rectification means that when you bring your power problems to H-VW-M you're sure to get the perfect equipment recommendation.



Self-Contained Rectifier with Tap Switch Control

Remote Controlled Rectifier with Tap Switch Control

Germanium and Selenium Rectifiers . . . Rectifier Controls

Highest quality and efficiency, flexibility, economy and low maintenance are the characteristics combined in H-VW-M's full line of both Germanium and Selenium Rectifiers. 6 to 48 volt units—both remote and self-contained—provide the exact direct current low-voltage and high amperage required in aluminum anodizing. The widest possible choice of controls and control combinations is available. Such devices as manual or motor operated tap switch controls, continuously variable auto-transformers and saturable core reactors are used with or without supplemental controls to provide automatic voltage stabilization, automatic constant current as well as automatic programming.

Write for Bulletin ER-108, which gives further information about Rectifiers and Controls, plus useful control application suggestions.

Manual Tap Switch Control

Saturable Core Reactor

Continuously Variable Auto-Transformer

Motor Operated Tap Switch Control

Generators . . . and Controls

H-VW-M Motor Generators designed especially for metal finishing operations are built in sizes up to 50,000 amperes, and accessory equipment includes a full line of controls and control panels to cover any desired control function. Easy-to-maintain H-VW-M Motor Generators have exceptionally rugged and practical construction features insuring maximum performance and life. Standard voltage ratings range from 6 to 50 volts, and include the 18 and 24 volt units usually required for sulphuric acid anodizing, plus the 40 and 50 volt units used in chromic acid anodizing. Write today for 24-page Bulletin G-104, covering in detail all H-VW-M Generators.

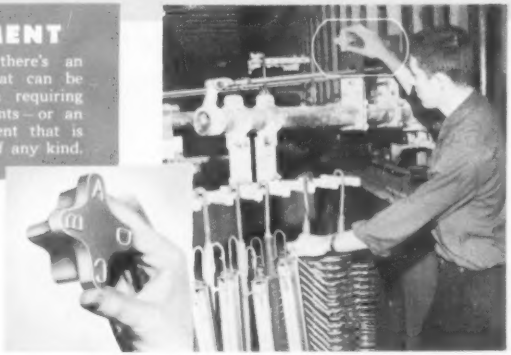
15,000 Ampere, 6-Volt Generator Unit

Automatic Anodizing Control Panel

Supplies, Equipment and Services Add Up Simplicity of Operation in Your Plant

PROCESSING EQUIPMENT

Whatever your anodizing procedure, there's an H-VW-M Full Automatic Conveyor that can be adapted to any production application requiring automatic cycling of individual treatments—or an H-VW-M Tank with accessory equipment that is perfectly adapted to still tank methods of any kind.



Workman "dials" desired cycle in refrigerator plant. Parts will by-pass or lower into baths as dial setting dictates.

Automation in Metalfinishing— *Full Automatic Conveyors with Dial-A-Cycle*

H-VW-M's new DIAL-A-CYCLE system automates nine or more complete metalfinishing processes on a single anodizing or electroplating machine. This revolutionary by-pass mechanism can be used on any metalfinishing installation for anodizing, electroplating, or similar processing. It is especially useful and effects substantial cost reductions when a variety of parts requires several different processes or colors.

DIAL-A-CYCLE, as the name implies, is controlled by a simple dial setting. The dial is mounted on the carrier arm that carries the parts through processing tanks. It is set by the machine operator for the processing steps through which each load of unfinished parts is to move. Automatic conveying then takes over, lowering the parts into the required tanks and bypassing others.

Different products, requiring different anodizing cycles, may be processed at the same time, with the same equipment. DIAL-A-CYCLE gives you new versatility while reducing operating, labor, and maintenance costs. Close, automatic control of transfer and immersion periods improves quality.

DIAL-A-CYCLE is the newest of many types of conveyors and equipment H-VW-M supplies to aluminum finishers. H-VW-M also design, manufactures, and installs return-type conveyors . . . elevator conveyors . . . straight-line conveyors . . . and others. For a complete description of all types, write for Bulletin FA-105.

Tanks and Equipment

At H-VW-M—the plating and anodizing industry's workshop—you'll find tank equipment for every phase of your work. For chromic acid anodizing, H-VW-M double electric welded unlined steel tanks are offered, along with steel coil equipment for cooling and heating. The entire system is H-VW-M designed, supplied and installed. For sulphuric acid anodizing, lead-lined steel tanks, plus the necessary cooling coils and air agitation assembly, are supplied. Tanks are fabricated from hot rolled steel, stainless steel, and aluminum. Other types of tanks are also available. Bulletin No. T-108 gives full particulars about this important H-VW-M equipment. Every conceivable type of auxiliary equipment is engineered and supplied, according to customers specifications, including a complete packaged refrigeration system for anodizing solutions.

And H-VW-M's Engineering and Installation Service

Anodizing problems of *any* kind? H-VW-M is prepared to set up your entire anodizing system from beginning to end—a system made up of components scientifically engineered to work together with utmost efficiency. Because of this, and because of H-VW-M's continuing research and development in every aspect of the anodizing picture, you can be confident that the recommendation you receive from H-VW-M is the very *best*.

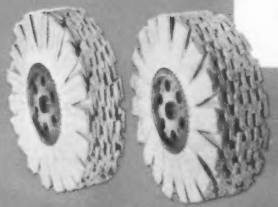
What's more, if requested, H-VW-M sees to it that the equipment you buy is H-VW-M *installed*. This means perfect, efficient operation from the start.

Add to this the fact that an H-VW-M technical representative—ready to serve you—is no further than your telephone. These representatives serve in principal cities across the nation. Get to know the one nearest you. He can help you get the most from your aluminum finishing equipment and supplies.

TURN THE PAGE FOR ALUMINUM BUFFING AND CLEANING SUPPLIES

ALUMINUM BUFFING AND CLEANING SUPPLIES

Since aluminum came into its own after World War II, considerable H-VW-M research and development work has been devoted to the perfection of buffs and compounds suiting the unique physical characteristics of this popular light metal. When long-wearing H-VW-M Buffs are used in conjunction with H-VW-M compounds especially formulated for aluminum finishing, you have the perfectly balanced combination for economy, efficiency and quality performance.

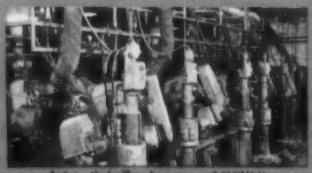


Buffs

Nowhere will you find a wider selection of the buffs you need for preanodizing operations than at H-VW-M. Whether you're looking for a super-heavy-duty buff like new steel-centered Ruff-L-Buffs (which are available untreated, or Binderized® for extra long wear) medium duty buffs like Triplex Buffs, or a buff for medium-to-light service such as the Full Disc Buff, you need look no further than H-VW-M. The full H-VW-M line also includes new Tufta-Flex Buffs (cloth tufts) and Sisal-Flex Buffs (with sisal-centered tufts).

Among this array you'll find the exact buffs for your aluminum finishing needs. Every one is characterized by first quality, uniform new material of close weave and good weight . . . tight sewing with heavy thread . . . and proper balance. Write for 12 page Bulletin B-103, which describes H-VW-M's entire buff line.

Hand buffing using H-VW-M buffs, compounds.



Automatic buffing by means of H-VW-M Liquimatic System.

Compounds

For heavy duty cutting, H-VW-M Liquid Tripoli Compounds 303 and 420 were developed, and are now widely used in the cooking utensil industry. For the appliance, storm window, construction materials and automotive fields, H-VW-M's new Liquimatic Liquid Compound No. 728 has proved especially successful, giving excellent cut, while leaving the surface with deep, high color.

H-VW-M Bar Compounds also find broad use in aluminum finishing. A variety of tripoli bar compounds are offered in varying consistencies to meet all cutting requirements. For cut and color, special white compounds are available. And for high color, several new H-VW-M aluminum oxide compounds--No.'s 6-B-168, 6-B-72 and 8390--give unusually good results. Write for Bulletin CO-103.

Cleaners

H-VW-M devotes constant research to the subject of cleaners in its search for ever better products in the aluminum finishing field.

Matawan Cleaners are designed specifically to give superior results in soak cleaning, power spray operations, oxide removal, and for special aluminum cleaning and etching operations. Of particular interest is H-VW-M's 858 Cleaner, which prevents scale formation, thus keeping coil and tank walls scale free. This unusual aluminum cleaner leaves an extremely bright surface, and, because of its built-in regenerator, makes maximum effective use of caustic in the bath.

In line with its desire to supply the exact cleaner for the job, H-VW-M offers its extensive laboratory facilities where circumstances demand a special cleaner.

When you think of aluminum finishing equipment and supplies--think of H-VW-M first. Buying from one dependable source . . . H-VW-M . . . means one company assumes full responsibility--your guarantee that you're getting the best . . . in products . . . in performance, in *extra* service.

PLATEMANSHIP

Your H-VW-M combination -- of the most modern testing and development laboratory -- of over 80 years experience in every phase of plating and polishing -- of a complete equipment, process and supply line for every need.

HANSON-VAN WINKLE-MUNNING COMPANY, MATAWAN, N. J.

Plants: **Matawan, N. J. • Grand Rapids, Mich.**

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H-VW-M

INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

4758

Printed in U.S.A.

Looking for more "shots per dollar" in vacuum metallizing coils?

By switching to the best coil design, vacuum metallizers have realized as much as 30% more shots per dollar from Sylvania Tungsten Coils. Why is this possible? Because Sylvania helps vacuum metallizers find the right coil to do their job most economically. Whether you buy ready-made coils or form your own from tungsten strand, Sylvania is ready to help you get maximum efficiency.

Sylvania coils are formed of high density tungsten strand manufactured to exacting standards of quality control. Sylvania Tungsten Strand is available in 3 to 7 ply with wire diameters of 0.020 to 0.600 inches per strand.

We invite you to write, outlining your specific requirements and problems.

SYLVANIA ELECTRIC PRODUCTS INC.
Chemical and Metallurgical Division
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Lighting • Radio • Electronics • Television • Atomic Energy

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Plant Safety: Gloves Play an Important Part

Electrotyping firm cites importance of gloves in protecting employees and reducing absenteeism . . .

Flesh-attacking chemicals and sharp metal edges have always been a nasty combination to work with. But they're a part of the electrotyping industry. In recent years, however, the introduction of gloves specifically made to cope with these hazards has sharply reduced the dangers involved.

A good example of the trend toward better protection of hands is the Akron Electrotype and Stereotype Company, Akron, Ohio. This company supplies full-color electrotypes for letterpress printing of cardboard cartons used in packaging many nationally advertised products.

Chromic acid, nitric acid, sulfuric acid, nickel salts, copper sulfate and fluoboric acid are a few of the chemicals used in making these electrotypes. Gloves would be necessary even if these corrosive chemicals were the only danger. But they serve another important function, also. When the shell, formed by electrolytic deposition of copper or

Fig. 1—Peeling a shell from the mold used to make an electrotype requires gloves for protection of the hands from metal burrs formed on the outside edges of the mold.

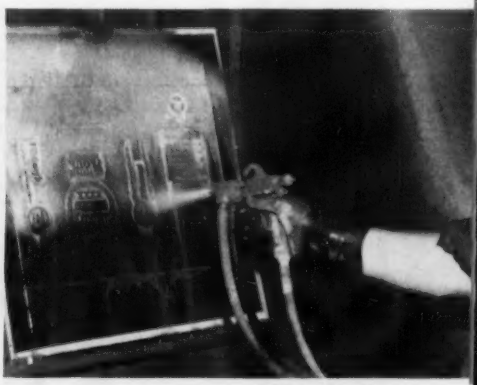


Fig. 2 — Coating mold with a silver spray solution makes it conductive to electricity. Acid resistant neoprene gloves protect the operator's hands from severe staining.

nickel on a silvered mold, is peeled from the mold, the gloves protect the operator's hands from hundreds of needle-sharp points of burrs formed on the outside edges of the mold (Fig. 1). Thickness and length of the burrs varies from mold to mold, but even the smallest could easily pierce the exposed flesh.

Coating the mold with a silver solution to make it conductive is another operation that requires gloves (Fig. 2). The silver solution stains hands badly; in its undiluted state, it burns the flesh.

The close-fitting, curved-finger gloves used in these and similar operations are made of neoprene to resist acid attack.

Removing spent adhesive from the cases to which the silvered molds adhere while in the electrolytic solution is another operation where gloves are used (Fig. 3). Here the purpose is not protection from danger. It is to save the worker from the irritation of getting the sticky material all over his hands and clothing. Natural rubber gloves of the "gauntlet" type have been found to be the most serviceable here.

All of the gloves used in this plant are made by Wilson Rubber Company, Canton, Ohio, under the trade name Wil-Gard."

John Weiand, president of the Akron Electrotype firm, is a firm believer in plant safety. Hand protection is an important part of his safety program. Mr. Weiand points out that when workers wear gloves, their motions are almost entirely productive. Without gloves, however, the workers make many unnecessary motions just to protect themselves from the dangers involved in their work.

Fig. 3—Removing spent adhesive from cases prior to applying a new coating for next step in making a cast. These rubber gauntlet-type gloves protect hands and clothing from the gummy, sticky adhesive that quickly adheres to anything it touches. (Photographs courtesy Wilson Rubber Company, Canton, Ohio.)

★ ★ ★

Conveyorized Spray Painting: New System for Finishing Office Furniture

Nine employees—two supervisors, four sprayers and three other workers—operate a conveyorized finishing system that will turn out up to 50,000 pounds of metal office furniture daily in a plant recently completed by Art Steel Co., Inc., in Los Angeles, California.

The new painting system, installed by Despatch Oven Company, Minneapolis, Minnesota, will handle office furniture parts up to five feet high. The whole system occupies about 6,000 square feet of floor

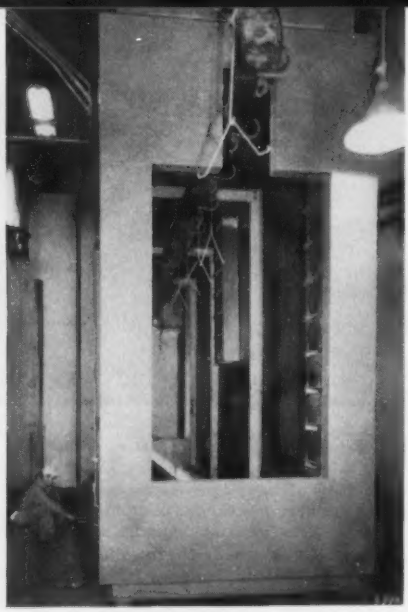


Fig. 1 — Worker lights gas-heated dry-off oven. Parts have already been cleaned and phosphatized before entering this oven.

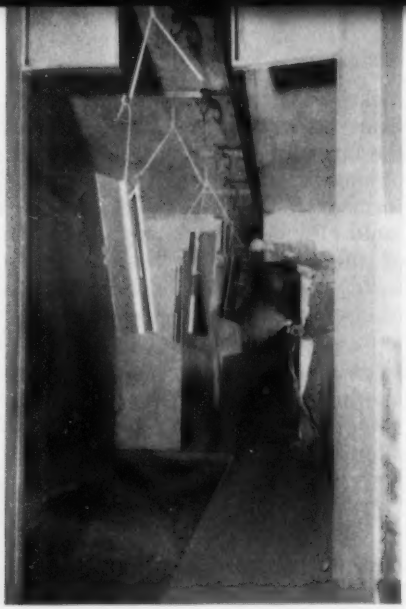
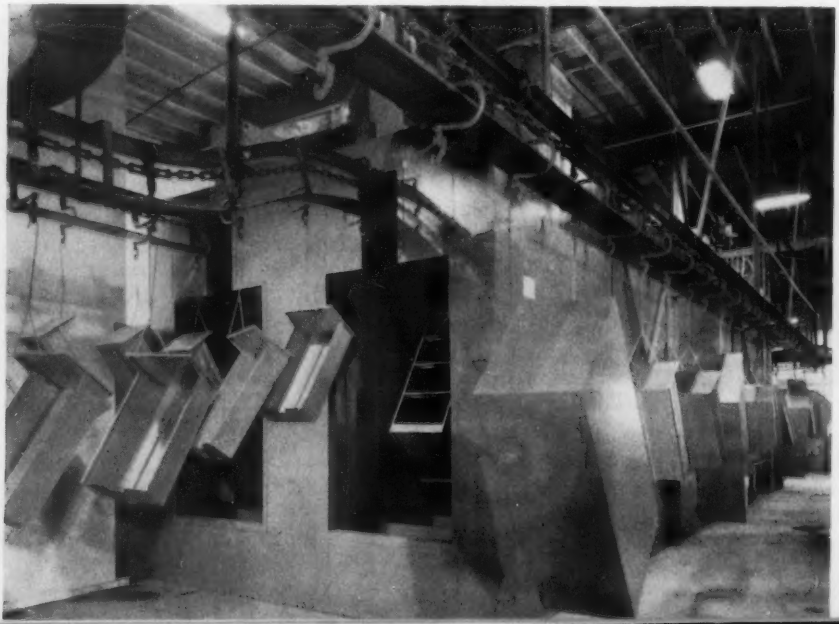


Fig. 2 — Parts move through two opposed spray booths, where both sides are sprayed. One of the booth's water curtains is at left.

Fig. 3 — Bake oven. Freshly painted parts are entering at left, baked parts coming out of the oven at right, ready for unloading. Parts make two passes through the 50-foot baking oven. (Photographs courtesy Despatch Oven Company, Minneapolis, Minnesota.)



space, or about one-sixth of the total plant area.

The Finishing Process

The new system cleans, phosphatizes, paints, and bakes the furniture. It was designed to provide maximum production with a minimum of manpower and floor space.

The first step in the system, after heavier greases and shop soils have been removed, is cleaning and phosphatizing. A five-stage washer cleans the metal surface and applies a phosphate coating.

Parts next travel to a 26-foot-long dry-off oven (Fig. 1), which evaporates the water remaining on the parts as they pass through the oven, held at 400 deg. F., in three minutes.

Spray painting is the next step. Four sprayers in two water-wash spray booths spray both sides of each part as it passes by on the conveyor (Fig. 2).

Baking the parts completes the finishing process. Each part makes two passes through a 50-foot convection-type gas-heated baking oven (Fig. 3), which is operated at 350 deg. F. Components are baked for 15 minutes.

Unloading and assembly completes the furniture manufacturing process. Finishing takes just under an hour to complete.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

A CHALLENGE FOR STEEL. A film dramatizing mill and fabricator practices in finishing stainless steel and carbon steel.

Where can prefinishing of steel be done most economically and profitably —in the steel mill or at the fabricating plant?

Can a mill profit from strip grinding carbon steel, and sell it as polished stock?

Can a mill achieve a No. 3 quality through a slight reduction on bright rolls, and sell it without prohibitive extras?

These are among questions raised by this motion picture, produced by Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Designed for in-plant showing to production, sales and executive management personnel of steel mills and fabricating plants, the color film is available for showing as part of an overall presentation dealing with coated abrasives and their application to production line problems.

Conducted by 3M company personnel, the in-plant meetings are planned for an hour in length, and include a review of coated abrasive components, a showing of the film, a technical presentation pointing up factors affecting coated abrasive usage, and a general discussion period. All of the finishing practices shown in the film, which was made at several production line locations, can be adapted to specific finishing problems.

Among the coated abrasive finishing methods shown in the film are those for wide sheet grinding and polishing, strip scouring, and coil grinding.

Arrangements for in-plant meetings can be made through **Minnesota Mining and Manufacturing Co.**, Dept. F7-287, 900 Bush St., St. Paul 6, Minn.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

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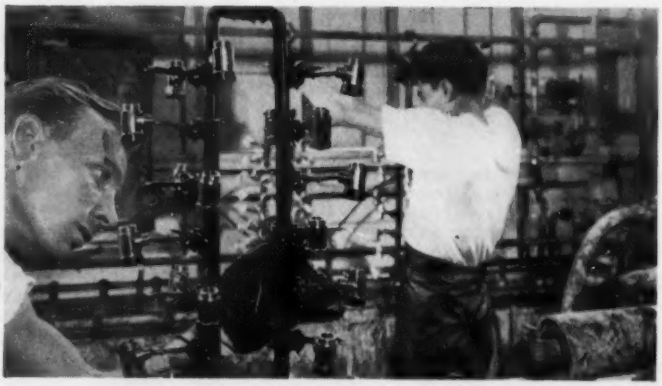
News about ®

UNICHROME
Trade Mark

New M&T bright cyanide copper



M&T Bright Cyanide Copper Process is already at work in sizable installations and a proved success.

Photo courtesy: Pottstown Plating Works, Inc.

Copper deposits now fit the need

Metal & Thermit now offers the most complete line of copper plating processes — has a deposit to meet all applications.

M&T (Copper-Tin) Bronze is recommended for the optimum in speed, or throwing power to cover the most intricate work, or for a most attractive final finish. This is a copper-tin alloy process that is as easy to control as single metal plating.

Unichrome Pyrophosphate Copper stands out when density of deposit and smoothness are primary. It is preferred for such jobs as stop-off in nitriding, and for printed electrical circuits.

M&T Bright Cyanide Copper offers mirror brightness and excellent plating speed as an undercoat for decorative chromium finishes.

Bulletins available on each.

–faster and more economical

Metal & Thermit bath uses entirely new addition agents for stability, more dependable operation

Users report that the new M&T Bright Cyanide Copper reduces operating costs and assures uniformly high plating quality with a minimum of control. The low cost solution can be made up with potassium, sodium, or a combination of the two salts.

The cost of operation is low due to long life and stability of the addition agents.

The deposits may be mirror-bright, if desired, or of a lesser degree of brightness, depending upon the specific requirements of each installation. The stability of the solution has enabled platers to obtain brighter deposits with greater consistency than ever before.

A wide bright range at high cathode efficiency assures high rates of deposition without burning on edges or dullness in recessed areas. High current densities may be used.

The process provides excellent anode corrosion, utilizing a new bath additive, NEOCHEL, which replaces Rochelle salts. The exceptional stability of this and other additives assures freedom from difficulty due to the accumulation of decomposition products in the bath.

Process control has been simplified. Only one chemical determination and a single Hull Cell test are required for control of the additives.

Unichrome is a trademark of Metal & Thermit Corp.

METAL & THERMIT
CORPORATION

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Pittsburgh • Atlanta • Detroit
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In Canada: Metal & Thermit—United Chromium of Canada, Limited, Rexdale, Ont.

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NORTHWEST

LEADS THE WAY WITH CHEMICALS FOR USE WITH

ALUMINUM

If you work with aluminum you'll be interested in Northwest's outstanding line of chemicals for use with modern alloys. It will pay you to investigate:

- **ALKALUME CLEANERS** — A full line of cleaners and etching compounds especially formulated for use on aluminum alloys prior to plating, anodizing, painting or welding.
- **ALKALUME PRE-PLATE** — An especially effective zincate bath for preparing aluminum for plating.
- **ANOSTRIP** — An easily handled liquid product, excellent for stripping anodic film from aluminum surfaces and racks without damage.
- **ALKALUME DS** — An efficient, economical, 100% active product for removal of etching smut at room temperature.

REMEMBER!

"Your cost per finished article is the true cost of your cleaner."

Northwest products are manufactured on the West Coast by
ALERT SUPPLY COMPANY, Los Angeles

NORTHWEST CHEMICAL CO.
9310 ROSELAWN DETROIT 4, MICH.

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Meet the Sel-Rex Family of Electroplaters' Services and Equipment...

PRECIOUS METALS PROCESSES

BRIGHT GOLD* — Mirror-bright finish in any thickness directly from the bath.

RHODEX† — Only rhodium electroplating process that yields extra heavy compressively stressed deposits.

SILVER SOL-U-SALT — non-dusting — safest and easiest to use.

BRIGHT RHODIUM — Brilliant, fine-grained, non-tarnishing deposits.

SILVREX BRIGHT SILVER* — Crystal-clear solution that produces mirror-bright deposits.

KARATCLAD #369 — ACID GOLD PROCESS — Absolutely no free cyanide — plates bright in any thickness at room temperature.

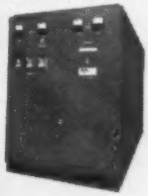
† *Patent Pending.* * *Patented.*

THE NEW JET PLATER

A complete, versatile, small-volume plating unit for precious metals plating. Incorporates a built-in rectifier with timer and other automatic features for high speed, quality work.

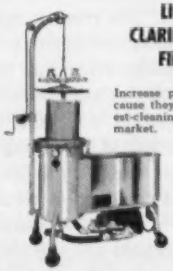
CUSTOM-ENGINEERED SELENIUM • GERMANIUM PLATING RECTIFIERS

Custom-built to your requirements at the price of ordinary mass-produced equipment.



LIQUID CLARIFICATION FILTERS

Increase production because they are the fastest-cleaning filters on the market.



Whatever your plating problem—precious metals, power, equipment or procedures—Sel-Rex Representatives are trained to "Custom Engineer" solutions to our mutual profit. Send for FREE technical data and case histories and see for yourself . . . we may have solved *your* problem last month.

Sel-Rex®

SEL-REX CORPORATION

NUTLEY 10, NEW JERSEY

Manufacturers of Exclusive Precious Metals Processes, Metallic Power Rectifiers, Airborne Power Equipment, Liquid Clarification Filters, Metal Finishing Equipment and Supplies.

Representatives in principal cities.

For more data circle 343 on Postpaid Card

Special Reports On Finishing Non-Ferrous Metals

NUMBER III—Lustrous, Corrosion-Resistant Finishing with Chemical Polishing Iridite

WHAT IS IRIDITE®

Briefly, Iridite is the tradename for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002" max.) gel-like, complex chromate film of a non-porous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.

Chromate conversion coatings are widely accepted throughout industry as an economical means of providing corrosion protection, a good base for paint and decorative finishes for non-ferrous metals. Certain of these coatings also possess chemical polishing abilities that have luster-producing, as well as corrosion-inhibiting, effects on zinc and cadmium plate, zinc die castings and copper alloys. However, continued developments in this field have been so rapid that many manufacturers may not be completely aware of the breadth of application of this type of finish. Hence, this discussion of the many ways in which this chemical polishing characteristic can be used in final finishing or pre-plating treatments to produce a lustrous appearance with distinct display and sales appeal and appreciable savings in cost. Report I on decorative, corrosion-resistant finishes and Report II on paint base, corrosion-resistant finishes are available on request.

The degree of luster possible on a surface is a function of the degree to which the surface can be smoothed. Leveling to provide a smooth surface can be achieved by mechanical or chemical means, or a combination of these, depending upon the luster desired and the original condition of the metal. Chemical polishing effectively imparts luster otherwise difficult and costly to obtain. For this reason, it is often used to supplement or entirely replace mechanical polishing, depending upon the application and the original condition of the metal. Chemical polishing has the additional advantage of providing overall treatment of the submerged part. It reaches into even the deepest corners and recesses that are otherwise inaccessible. Certain of the Iridites are specifically designed to perform this chemical polishing operation. In addition they provide corrosion protection as do all Iridites, thus may be used either as a final finish or a pre-plating polish.

If Iridite is to be used as a final finish, in contrast to pre-plating treatment, the

(ADV.)

chromate conversion coating generated is allowed to remain, providing good corrosion resistance. Color inherent in these Iridite films ranges from a yellow cast to yellow iridescent. These coatings may be used without further treatment where this color is acceptable and good corrosion resistance is desired. Further, these basic coatings can be tinted by dyeing. Among the dye tints available are shades of red, yellow, blue and green. If desirable, the basic coatings can also be modified by a bleach dip leaving a clear bright or blue iridescent finish. In all cases bleaching reduces corrosion resistance.

As examples of this type of final finishing, Iridites #4-73 and #4-75 (Cast-Zinc-Brite) make possible for the first time, lustrous chemical polishing of the as-cast surface of zinc die castings. Thus, in many cases, sizeable savings in finishing cost are realized by elimination of plating costs. This economical method can be used on tools, appliance parts, toy pistols, locks and many other small castings. Another example is the treatment of copper and brass parts, such as welding tips, to eliminate buffing and provide additional corrosion resistance. In many cases, handling costs are reduced appreciably by replacing piece-part handling with bulk processing. Still another example of the use of this chemical polishing and protective quality of Iridite is a simple system of zinc plate, Iridite and clear lacquer instead of more costly electroplated finishes. Typical of this type of lustrous finish are builders hardware and wire goods.

As a pre-plating treatment, in contrast to final finishes, Iridite can be used to chemically polish zinc die castings or copper prior to plating. In such cases, Iridite should be applied as an in-process step, so that the protective film is removed before the plating cycle. The savings in handling, material and labor costs are obvious. This process has made it practical to plate chrome directly over copper on steel, conserving nickel, yet producing a lustrous chrome finish. Used after stripping faulty plate in reprocessing zinc die castings, Iridite restores luster to the casting, making possible replating without blistering.

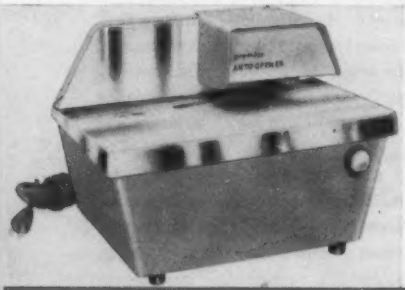
Other Iridite finishes are available to produce maximum corrosion resistance, a wide variety of decorative finishes and excellent bases for paint on all commercial forms of the more commonly used non-ferrous metals. As a final finish, appearance ranges from clear bright to olive drab and brown and many films can be bleached or dyed. As a paint base Iridite provides excellent initial and retentive paint adhesion and a self-healing property which protects bare metal if exposed by scratching. Iridites have low electrical resistance. Some can be soldered and welded. The Iridite film itself does not affect the dimensional stability of close tolerance parts.

Iridites are widely approved under both Armed Services and industrial specifications because of performance, low cost and savings of materials and equipment.

You can see then, that with the many factors to be considered, selection of the Iridite best suited to your product demands the services of a specialist. That's why Allied maintains a staff of competent Field Engineers—to help you select the Iridite to make your installation most efficient in improving the quality of your product. You'll find your Allied Field Engineer listed under "Plating Supplies" in your classified telephone book. Or, write direct and tell us your problem. Complete literature and data, as well as sample part processing, is available. Allied Research Products, Inc., 4004-06 East Monument Street, Baltimore 5, Maryland.

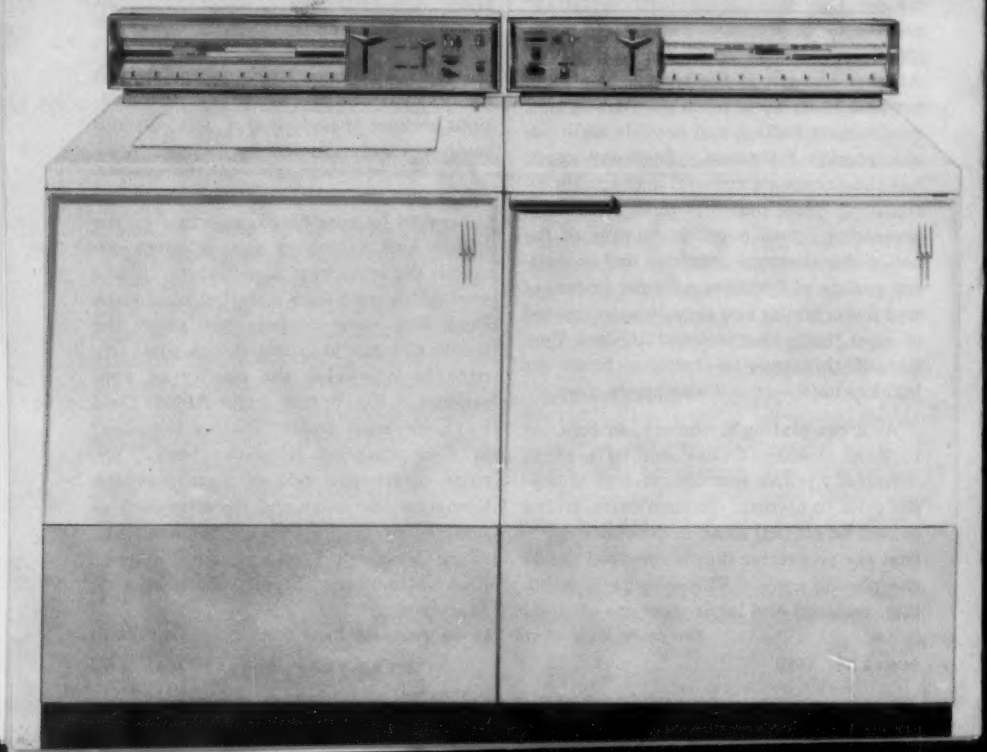
For more data circle 344 on Postpaid Card (ADV.)

Finishes that Aid in Appearance

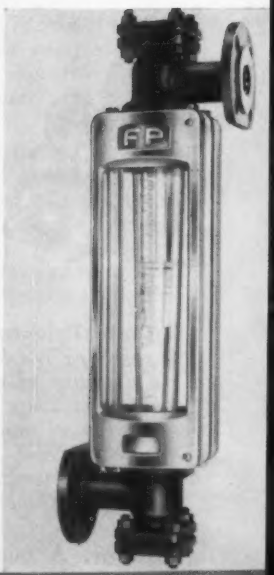


AUTOMATIC LETTER OPENER *(left) called the Auto-Opener, has a gray wrinkle finish, trimmed with satin-finished chromium. Made by Martin-Yale, Inc., Chicago, it will open any envelope, regardless of thickness.*

KELVINATOR AUTOMATIC WASHER AND DRYER *(below) feature porcelain-enameled cabinets. Both have porcelain-enameled spinning tubs, too, to give smooth, long-lasting surface, easy on clothes, resistant to corrosion.*



and Utility



PORCELAIN ENAMEL FUSED TO THE INNER SURFACE of the cast iron fittings on this Fischer & Porter variable-area flowmeter (right) allows the meter to handle many types of corrosive fluids. Glass-like finish is tough, will withstand varying temperatures and shock.

PITTSBURGH HILTON HOTEL, (below) now under construction, will feature aluminum walls, anodized and dyed gold. All panels, column covers, and window frames will be fabricated from gold-anodized sheet and extrusions produced by Aluminum Company of America and finished by Flour City Ornamental Iron Company, Minneapolis.

finishing clinic

Suggested solutions to problems submitted by readers. Send your problem to our Editorial Staff. There is no charge.

Enamel Thickness Tester

Question: *We are interested in finding a source of supply for an instrument to measure the thickness of enamel on steel panels after the enamel has been baked.*

This instrument should be able to give us the thickness of paint in mils.

E. B.

Answer: A number of manufacturers of thickness testers are listed on Page 189 of the PRODUCTS FINISHING DIRECTORY. You will be able to secure the information you desire from them.

★ ★ ★

Corrosion Resistance for Aluminum Die Castings

Question: *We would appreciate information on test runs to evaluate corrosion resistance (relative) and costs of the following coatings for aluminum die castings: Martin Hardcote, Alumilite, chrome plate, electroless nickel and electrolytic nickel.*

C. M. M.

Answer: In reply to your inquiry, we are pleased to refer you to two research organizations from whom you may be able to secure the information you desire.

★ ★ ★

Filter for Paint Dip Tanks

Question: *We are interested in securing a filter for our dip tanks. At present we have a circulating pump from the base of the tank through to the surface at the opposite end, but all it does for us is to keep the paint moving when there is no agitation from the dipping.*

W. H. W.

Answer: A number of companies manufacturing products of the type you desire are listed on Page 84 of the PRODUCTS FINISHING DIRECTORY, a copy of which we are forwarding with this letter. Addresses of the companies are listed in the section of the DIRECTORY beginning on Page 199.

★ ★ ★

Surface Treatment of Metallic Parts

Question: *At your convenience, please send me typical copies of PRODUCTS FINISHING. We are interested in contacting advertisers supplying surface-treatment materials for metallic parts prior to electroplating. Any specific data which you can furnish in this line will also be appreciated.*

B. W.

Answer: Under separate cover, we are sending several copies of our monthly publication, PRODUCTS FINISHING, and a copy of our annual directory of the finishing industry, the PRODUCTS FINISHING DIRECTORY. Our magazine is sent to you without cost or obligation of any kind.

We note your interest in surface

treatment of metallic parts prior to electroplating. Many of the articles in PRODUCTS FINISHING describe various surface treatments used to prepare metals for electroplating.

You will note in the copies of PRODUCTS FINISHING sent to you, many advertisements by companies who sell materials for surface treatment of metallic parts prior to electroplating. You will find these companies classified in the PRODUCTS FINISHING DIRECTORY under the proper surface treatment process.

Perhaps for more immediate attention to your needs you could talk to some of the companies listed in the section of the PRODUCTS FINISHING DIRECTORY entitled "Distributors." Those companies designated "PL" are the ones marketing products for the electroplating field.

★ ★ ★

Keeping Tapped Holes Free of Paint During Finishing

Question: *We are often faced with the problem of keeping small, tapped holes free of paint during finishing. Is there a material, other than masking tape, available to achieve that end which will withstand baking temperatures of up to 350 deg. F., and in no way affect the quality of the paint finish in adjacent areas?*

O. C. K.

Answer: Both suppliers of "Masking Caps and/or Discs and/or Plugs" and "Masking Devices, spray painting" are listed in the PRODUCTS FINISHING DIRECTORY on Page 106. We are enclosing a copy of the DIRECTORY so that you may be able to write to these companies.

★ ★ ★

Silver-Reduction Process

Question: *We understand there is a process called "Silver Reduction" and we would like as much information on this process as possible. We are also interested in names of companies in our area who could show us equipment for silver reduction.*

H. W.

Answer: One silver reduction process is that used in the electrotyping and electroforming industry to produce a thin silver coating on plastic plates by chemical reduction. Two solutions are sprayed simultaneously and react on the plastic surface to produce the silver coat.

Information on the solutions used, and general information on this process, may be obtained from the companies listed on Page 178 of the PRODUCTS FINISHING DIRECTORY under the heading "Spray Metalizing (silver spray) Supplies." We are sending you a copy of our DIRECTORY with this letter.

★ ★ ★

Stripping Coating from Heavy Copper Wire

Question: *Could you tell us how to strip the coating from heavy copper wire? Two inches of the wire have to be stripped for silver plating, while the remainder must retain the insulating coating.*

B. J. G.

Answer: We are suggesting several companies who will be able to give you information on the process in which you are interested.

The method of stripping which you will select depends upon the conditions under which you wish to work and the speed of stripping which you desire. There is a fused salt stripping method which is quite rapid, but requires rather extensive equipment. Conventional strippers may be either of the organic solvent type or of the hot caustic soda solution type. In any case, the companies mentioned can make recommendations which should enable you to solve your problem.

296 extra square feet per gallon with Lowe Napry Red Primer!

One more good example of the kind of problem you can solve when you call in one of Lowe Brothers experienced finishing engineers. Here's the full report:

"This firm tested one drum of Napry Red Primer by reducing 48 gallons with 12 gallons of Naphtha. We finished 830 steel tanks, each 38 sq. ft., using 39 of the reduced 60 gallons. That averages 809 sq. ft. per

Find out what a Lowe Brothers finishing engineer can do to help reduce your painting costs. Let him make a "flow-chart" analysis of your finishing system *without* obligation. Send the coupon right now.

LOWE BROTHERS
INDUSTRIAL FINISHES

QUALITY UNSURPASSED SINCE 1870

Style-tested paints for Home and Industry

REPRESENTATIVES IN: Chicago, Ill. Boston, Mass. • Jersey City, N. J. Cleveland, Ohio • Pittsburgh, Pa. Rochester, N. Y. • Dayton, Ohio Columbus, Ohio • Milwaukee, Wis. Indianapolis, Ind. • Cincinnati, Ohio Detroit, Mich. • Springfield, Mass. Philadelphia, Pa.

The Lowe Brothers Company
Dayton 2, Ohio

PF-3

☐ Please have my nearest Lowe Brothers Finishing Engineer call on me as soon as possible.

NAME_____

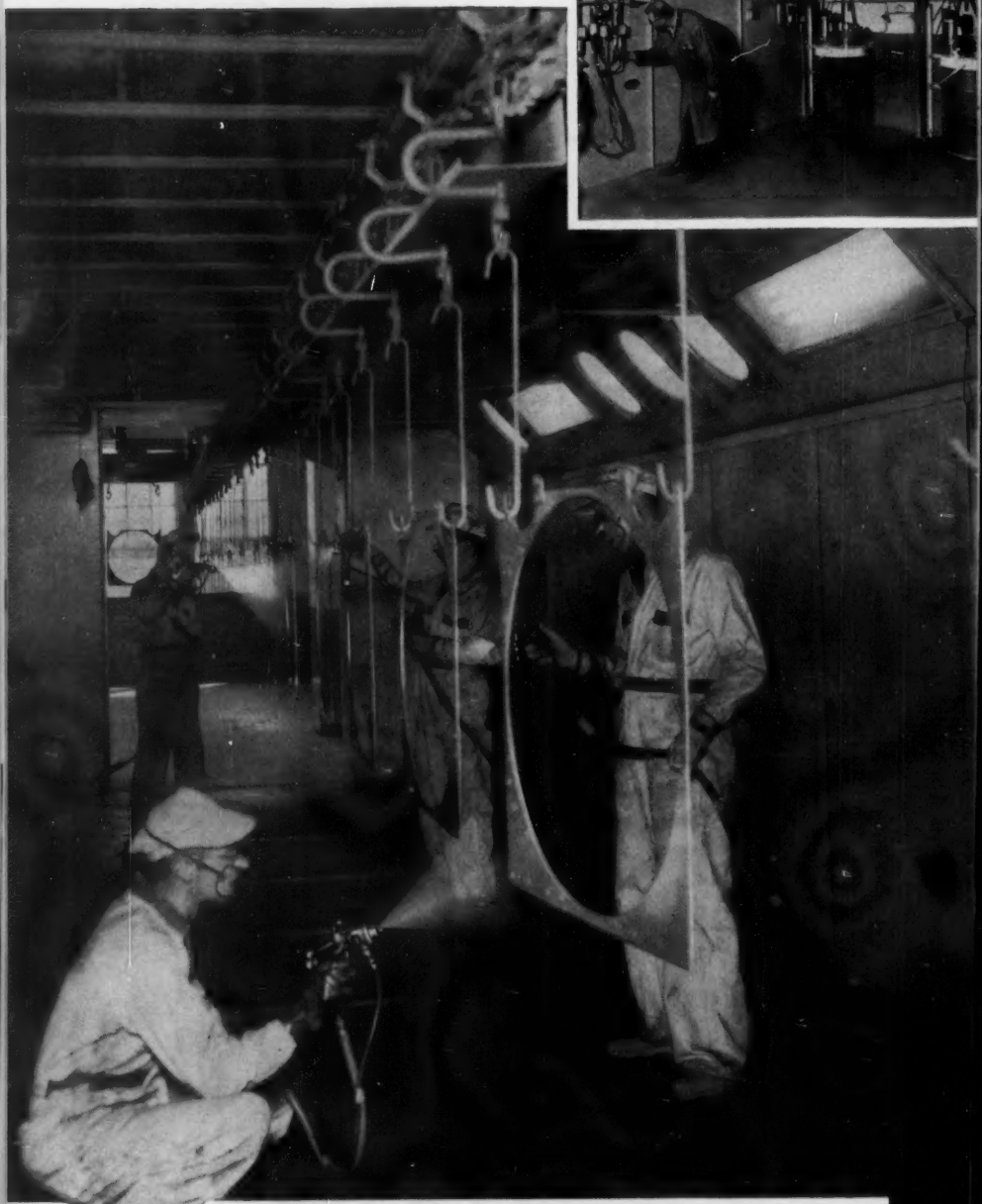
TITLE_____

FIRM NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

For more data circle 345 on Postpaid Card



Above: With a steady flow of two enamel colors always available, production has been more than doubled. Down time for color changes and enamel replenishment has been cut 40%.

For more data circle 346 on Postpaid Card

Far left: Binks air-operated pumps send enamel direct from 55-gallon drums to adjacent spray booth. Binks DUALHEET paint heaters, being inspected, raise enamel to 140° F. This lowers viscosity and reduces need for thinners.

Left: Metal assemblies start 3-stage phosphatizing operation in the Mayville, Wisconsin, plant.

AT MAYSTEEL, BINKS SPRAY UNITS HELP

boost phosphatizing, priming and painting production by 200%

"Maysteel Products, Inc., produces sheet metal parts and finished products on contract. As part of our expansion program we needed a modern finishing system that would produce quality work on tight schedules. To help us solve the problem, we called in Binks," reports Maysteel's president, Mr. C. E. Stryker.

Complete finishing system

METAL PREPARATION: A three-stage conveyorized phosphatizing system was developed employing 384 Binks stainless steel spray nozzles. The nozzles completely bathe the metal parts in chemically treated water, wash water and chromic acid rinses. Materials are reclaimed and recycled.

METAL PRIMING: Continuing on the conveyor, parts pass through a drying oven into a 22' water wash spray booth. A Binks circulating system supplies primer to two painters using Binks Model 7 spray guns.

ENAMELING: After another oven drying, the parts are ready for a coat of hot spray enamel in a second water wash spray booth. Up to five painters using Binks Model 7 spray guns are supplied by a two-color circulating system. Binks Dualheet paint heaters, located just outside the booth, raise the enamel to 140° F. This eliminates the need for thinners and insures full-coat coverage in a single pass.

Engineering assistance available

Learn how Binks extensive finishing experience and equipment can be of benefit to you. There is no obligation. Just contact your nearest Binks Branch Office or, if you prefer, write direct to the address below.

Ask about our spray painting school
Open to all...NO TUITION...covers all phases

Binks
EVERYTHING FOR SPRAY PAINTING

SPRAY GUNS

SPRAY BOOTHS

NATIONWIDE SERVICE

Binks Manufacturing Company
3118-40 Carroll Ave., Chicago 12, Ill.

REPRESENTATIVES IN PRINCIPAL U.S. & CANADIAN CITIES • SEE YOUR CLASSIFIED DIRECTORY

Page 84

New Equipment, Materials, Processes

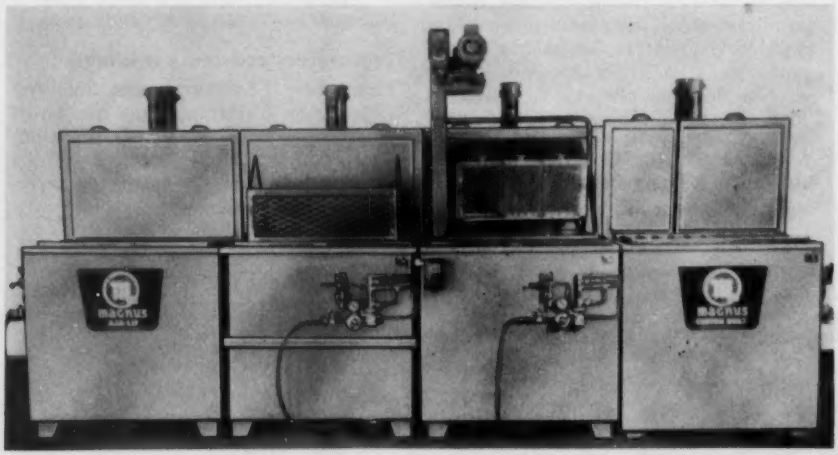
Polishing, Buffing, Degreasing, Cleaning, Barrel Finishing, Plating, Anodizing, Phosphatizing, Baking, Vacuum Metalizing, Chromate Coatings, Paint Finishing, Waste Treatment

Cleaning Machine

Manufacturer: Magnus Chemical Co., Inc., 208 South Ave., Garwood, New Jersey.

Equipment: The Magnus Aja-Lif Cleaning Machine.

Description: A batch-type cleaning machine in which parts to be cleaned are placed on a platform that lowers into the cleaning solution and agitates the parts up and down vigorously. The stroke that the platform makes while agitating is adjustable from a 3-to-5-inch stroke to one that raises the work completely above the solution each time. Timer controls length of the cycle. Models available with "Gyro-Vertical" motion, which rotates the work at the same time it is being raised and lowered in the solution.



Four Magnus Aja-Lif Cleaning Machines set up in a series. Movable-basket attachment on third machine revolves parts at the same time they are being agitated up and down.

Several of these machines can be used in conveyorized setups for washing, rinsing, drying, other operations.

For more data circle 1 on Reader Service Card

★ ★ ★

Lining Material

Manufacturer: Equipment Div., Wagner Brothers, Inc., 7800 Dix Rd., Detroit, Mich.

Material: Vyflex Fligid, an unplasticized polyvinyl chloride lining material for corrosion proofing.

Description: This plastic lining is produced in continuous sheets that are secured to the surface being protected (metal, concrete, wood, and so on) with a cement. Joints between the sheets are hot-gas-welded with a PVC filler rod or strip. The completed liner resists many corrosives, including concentrated oxidizing acids, concentrated alkalies, and many organic chemicals.

Typical Applications: Lining plating and processing tanks, ducts, hoods, other surfaces that are exposed to strong corrosives.

For more data circle 2 on Reader Service Card

★ ★ ★

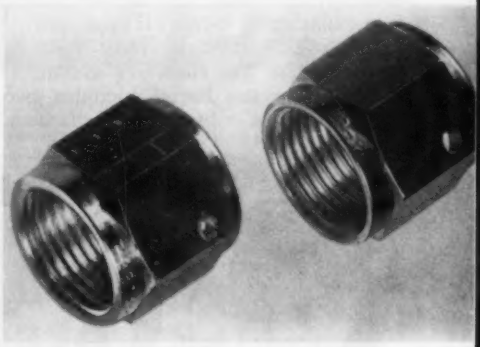
Vibrating Barrel Finishing Machine

Distributor: Minnesota Mining & Manufacturing Co., 900 Bush St., Dept. FH-127, St. Paul 6, Minn.

Equipment: The Vibraslide barrel finishing machine, which rotates as well as vibrates during operation.

Description: Recently introduced Vibraslide barrel finishing machine is said to speed barrel finishing and make it possible to barrel finish inside diameters. The machine will also accommodate a larger number of parts in a single load, it is stated, since rotation is slower and the barrel is continually vibrated.

The vibrating barrel is particularly effective in cut-down operations, the manufacturer states. With the vibrator turned off, the machine is a standard barrel finisher. The rapid rate of stock removal, even with the barrel rotating at four r.p.m., the manufacturer points



Two operations were performed by the Vibraslide barrel finishing machine on this threaded part: small hole was deburred and ID smoothed; threaded ID was smoothed to specification. Before, left; after, right.

Vibraslide Barrel Finishing Machine: for fast cut-down operations, inside diameters

out, makes it possible to process large or delicate parts.

Construction: The machine resembles a standard octagonal barrel, except that the frame is necessarily larger (67½ by 50 by 96 inches) to accommodate the vibratory system.

Power for the barrel includes two motors and a vibratory mechanism. All three elements can be removed easily for maintenance. The entire mechanism is rubber mounted to minimize vibration. Securing of machinery is recommended, however.

Operation: While both vibrating and rotary motion are taking place, a double motion is set up. When the movement of the vibratory cycle is in opposition to the movement of the rotation of the barrel a resistance is built up within the sliding mass, which increases cutting action; thus the machine's speed in cut-down operations is the result of opposing forces within the barrel.

The vibratory barrel will operate at speeds of four to 20 r.p.m. Speed of the vibrator is fixed at 2300 cycles per minute, and both ends of the barrel are synchronized with timing belts so that vibration is uniform throughout the media.

Load levels presently being used with standard barrels are effective with the new system, the manufacturer states. It may be economical to reduce media and compound charges after a trial run has been made on a given part.

IT'S EASY TO
STRIP
OFF PAINT
and Solve Your Stripping Problems with—
EPOXYSTRIP

PAINT STRIPPER—Saves Time and Money!

A new more powerful paint stripper that outstrips all others! No organic finishes have yet resisted this amazing paint stripper. It was especially formulated to remove epoxies . . . with the same ease that it removes baked enamels, lacquers, etc. No stripping scum—clean rinsing!

- EPOXYSTRIP WILL NOT HARM SOFT METALS
- ECONOMICAL—MORE JOBS PER GALLON AT LOWER COST
- NO SCRUBBING OR MANUAL ASSISTANCE
- RECOMMENDED BY LEADING FINISH MANUFACTURERS

JOBBERS: Beck EPOXYSTRIP sells on demonstration. Try it and see for yourself.

SEND FOR FREE BROCHURE

BECK EQUIPMENT COMPANY
3350 WEST 137th STREET — CLEVELAND 11, OHIO

For more data circle 347 on Postpaid Card

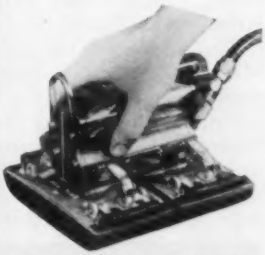
SUNDSTRAND

Choose from six sizes of "Job-proved" Air Sanders ...then watch output climb!

Six sizes of Sundstrand Air Sanders—weighing from 3 to 30 lb—all suitable for wet or dry sanding, give you unmatched freedom of choice. Let us show you advantages of each—without obligation, of course.

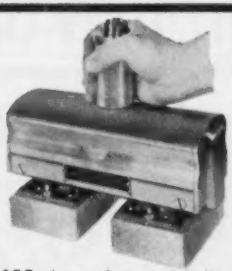
OS-800—lightest weight orbital air sander on the market, at only 3 lb, packs the power and speed needed for production jobs.

OS-700—single-pad orbital sander, weighing 5 lb, operates over 6000 cycles per minute.

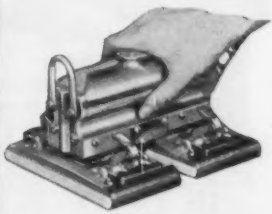


1000—straight-line sander with big abrasive area, operates at 2500 oscillations per minute, palm lever control, 7½ lb.

SP-101—straight-line, single-pad sander, 3000 oscillations per minute, 5 lb.



600—heavy-duty, straight-line unit for sanding, pumice rubbing, or polishing, 1100 oscillations per minute.



4000—straight-line, two-pad sander with longer, slower stroke, 2100 oscillations per minute, 9 lb.

SUNDSTRAND MAGNETIC-PNEUMATIC PRODUCTS

Division of Sundstrand Machine Tool Co. · 1020 Ninth Street, Rockford, Illinois

SUNDSTRAND

A name to remember in **AIR SANDERS**

For more data circle 348 on Postpaid Card

Typical Applications: Truss rings, jet blades, magnet armatures, large or delicate parts, other parts with inside diameters; processing parts where rapid cut-down is desirable.

For more data circle 3 on Reader Service Card

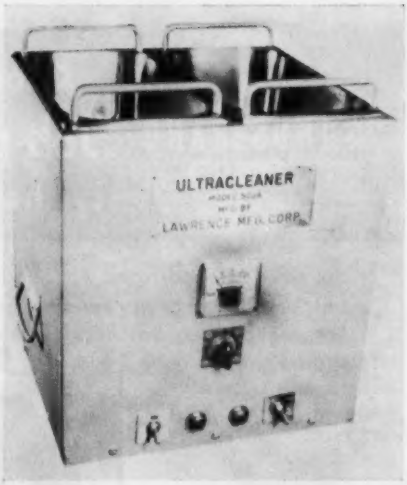
★ ★ ★

Ultrasonic Cleaning Machine

Manufacturer: Lawrence Manufacturing Corp., Evans Terminal, North Broad St., Hillside, N. J.

Description: The Ultracleaner, Model 500A, is a stainless steel ultrasonic cleaning machine. The unit has an ultrasonic cleaning chamber and a rinse basin. It will accommodate parts up to 10 inches long.

A second ultrasonic washing tank may be plugged into this unit and operated concurrently or separately, using no additional equipment.



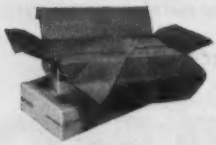
Lawrence Model 500A Ultrasonic Cleaning Machine: one or two chambers at same time

For Dust Free Finishes!

BOND TACK CLOTH

IN ROLLS

Cut off any size piece to use as needed.



IN BULK

Cut and folded. Ready to use.

STAYS SOFT AND TACKY — A SPECK-FREE FINISH EVERY TIME

Now Available in Rolls or Cut Bulk—White or Gold

In Four Different Types of Cloth

Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36" wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up! Choice of Standard, Extra Tacky or Less Tacky, as desired.

The Cut Bulk size is 18" x 36" . . . folded to 4½" x 18" or 9" x 18" for ease of handling. ALL BOND TACK CLOTH is *Spontaneous Combustion Proof, Lint-Free and Wax-Free.* Gives a sparkling speck-free Finish *every time.* Clean and Sanitary. No waste.

TRY THEM and COMPARE RESULTS. Samples Gladly Sent Upon Request.

"The Tacky Wiper Specialists"

Bond® **CHEMICAL PRODUCTS CO.**

2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS

ALSO INDIVIDUALLY PACKED IN GLASSINE ENVELOPES —144 to the Carton

A WARRANTY OF SATISFACTION IN EVERY CARTON

For more data circle 349 on Postpaid Card

NOW!

THE HIGH TEMPERATURE CHROME PLATING ADDITIVE

with DUAL ACTION *

New ZERO-MIST H.T.-2

* *IT STOPS MIST AND SPRAY COMPLETELY*

* *IT LOWERS SURFACE TENSION*

You save money TWO ways with new Zero-Mist H.T.-2! Its DUAL-ACTION absolutely suppresses mist and spray in decorative chrome plating baths of *any type* and at the same time lowers the surface tension. You don't have excessive dragout—You don't lose solution in the air—You don't contaminate other plating solutions—You simplify your ventilation problems . . . *and*, Zero-Mist H.T.-2 maintains its efficiency at any operating temperature.

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For the economical, complete suppression of mist and spray in your decorative chrome plating baths . . . with the biggest savings in chromic acid solution, see your local Udylite representative today and start using New DUAL-ACTION Zero-Mist H.T.-2 *right* away.

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Detergents, alkaline cleaners, acid solutions and chlorinated solvents may be used as the cleaning medium. Complete data available from the manufacturer.

Typical Applications: Cleaning precision mechanisms and instruments; cleaning complex parts with blind holes; cleaning printed circuit assemblies; cleaning jewelry and watch parts.

For more data circle 4 on Reader Service Card

Brightener Dispenser

Manufacturer: Allied Research Products, Inc., 4004-06 E. Monument St., Baltimore 5, Maryland.

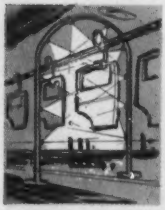
Equipment: The Auto-Flo-Pak, a one-gallon, cube-shaped disposable polyethylene container of liquid brightener, which fits into the Auto-Flo Dispenser, a wire mounting rack and feed tube that can be adjusted for the proper flow rate of brightener.

How to Use: Brightener is shipped in the polyethylene container, which is protected by a corrugated box. To set up the automatic feeder, tear open the perforated section of the cardboard package, pull out the spout and insert the feed tube into the container. The rate of flow is controlled with a clamp on the tube. Once the correct feed rate is attained, it remains constant. When the package is empty, remove the tube, throw away the container, and place a new package in the wire basket. Insert same tube in new package. No adjustment of flow rate is necessary.

Availability: The following brighteners are available in the new package: ARP 53, for use in barrel zinc

DELAVAN SPRAY NOZZLES

Catalog 33
28 pages of
nozzle information.



WASHING

COATING

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There are many reasons for choosing Delavan nozzles for your metal finishing applications. Specific features such as *radius orifice, tapered nozzle inlet, exclusive swirl chamber design* all add up to better nozzle performance and longer life.

DELAVAN Manufacturing Company
WEST DES MOINES, IOWA

For more data circle 351 on Postpaid Card

Second of two articles on

Chemical Prepaint Treatments for Metal Surfaces

By J. H. GEYER
Manager, Product Development Dept.,
AMERICAN CHEMICAL PAINT COMPANY

The first of these two articles dealt in general with chemical prepaint treatments and their purposes—and specifically with iron phosphate and zinc phosphate processes and their application. This one is devoted to phosphoric acid prepaint treatments and amorphous phosphate and chromate processes.

Phosphoric Acid

Perhaps the most widely used, and certainly one of the most economical, chemical prepaint treatments is the phosphoric acid cleaner combination materials, of which ACP Deoxidine® is an excellent example. It removes organic soils, rust, scale and contaminating elements from the metal surface; produces a light etch on steel, aluminum or zinc surfaces which considerably aids in increasing paint adhesion. It does not, however, form a coating in the true sense. Any breakthrough in the subsequent paint film will permit underfilm corrosion to proceed. Grades of Deoxidine are available for application by brush or swab, hot and cold dip, or hot spray.

Amorphous Phosphate and Chromate

These coatings are the films produced by the ACP Alodine® processes and similar ones on aluminum surfaces. They have met with wide acceptance in the prepaint treatment of venetian blind strips, refrigerator liners, aluminum heat transfer units, aircraft sheet metal assemblies, and many other items fabricated from aluminum. The various coatings provide an excellent film for the promotion of paint adhesion and effectively prevent underfilm corrosion. Like zinc, aluminum exhibits a tendency to react chemically with some paint systems. The Alodine processes develop a barrier film between the paint and the aluminum surfaces which prevents this reaction. The Alodines are extremely versatile materials that can be applied to aluminum surfaces by brush, hand spray, dipping, mechanical spraying, or roller coating equipment. Brush application is particularly well adapted to the processing of parts too large for simple dip systems or in manufacturing operations that do not warrant a tank setup.

Four major chemical prepaint treatments for metals have been covered briefly in these two articles. For more information, call on the nearest ACP representative or write us at Ambler, Pa.

CHEMICALS ACP PROCESSES

AMERICAN CHEMICAL PAINT COMPANY
Ambler 14, Pa.

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New Chemical Horizons for Industry and Agriculture

(Adv.)

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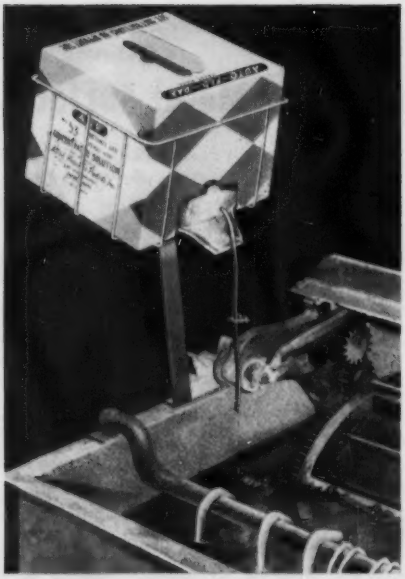

ARP Brightener Dispenser: easier control

plating; ARP 31, for rack zinc plating, and ARP 41, for cadmium plating.

For more data circle 5 on Reader Service Card

★ ★ ★

Copper Plating Addition Agent

Description: CU-521 addition agent for copper plating is said to act as a grain refiner in producing dense deposits. An alkaline material, soluble in cyanide solutions, the material can be used in both barrel and rack plating.

Characteristics: Produced in liquid form, this addition agent is said to improve throwing power. Using this material, it is possible to copper plate at 50 a.s.f., without roughness or burning, the manufacturer states. When operated at 100 per cent efficiency and increased copper metal content, baths with this additive will produce bright out-of-bath copper deposits at current densities up to 25 a.s.f.

Addition of three cubic centimeters

Another fine product made finer...

with the PARAMOUNT "Finishing Touch"

"Fine finishes are essential to the sales success of our products," says L. E. Mason Co., leading manufacturer of quality gifts. "To highlight the copper plated and oxidized finish of the coasters, we depend on Paramount Felt Bobs. We get the precise color we want with no 'ragged highlighted ends' and without destroying contrast between the oxidized backgrounds and highlights. Your bobs give good cut, good life while producing the fine finishes we demand."

Wherever fine finishes count, successful firms use Paramount Wheels and Bobs. Join the leaders — specify Paramount. Call your supply house.

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Bacon Felt Co.
447 West Water St., Taunton, Mass.

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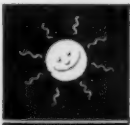
improve your quality... increase your production



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Today's outstanding heat-cured rack and tank coating. Meets industry's highest standards for corrosion and abrasion resistance.

MICCROSTOP

For extreme accuracy in masking parts for all plating cycles.

MICCROMASK

Provides complete masking protection for hard chromium plating.

MICCROPEEL

A special lacquer that can be peeled easily from parts after all plating cycles.

MICCROWAX

Two waxes widely used for selective stop-off. C-562 for hard chromium; C-600 for high-temperature cycles.

MICCROTEX

An air-dry rack coating for all plating cycles. Excellent for patching and repairing.

MICCROTAPE

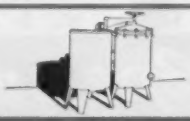
An extruded tape which provides unexcelled protection for plating racks, and for masking parts prior to selective plating.

MICCROTUBE

Extruded tubing especially suited for use on contact wires, and for selective plating of simple parts.

MICCROLOID

Corrosion-resistant industrial maintenance paint.



MICCRO Products

Developed and manufactured by experienced platers and coaters

MICHIGAN CHROME *and Chemical Company*

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Write for particulars on company letterhead.

For more data circle 354 on Postpaid Card

of CU-521 to the electrolyte during each eight-hour shift is sufficient to maintain the concentration of the addition agent.

Applications: Can be used in baths used to plate a stop-off for selective hardening in heat treating and in baths for plating a smooth, buffable copper.

Manufacturer: Wagner Bros., Inc., 432 Midland Ave., Detroit 3, Mich.

For more data circle 6 on Reader Service Card

★ ★ ★

Mechanical Loader for Fixture-Type Barrel Finisher

Manufacturer: Grav-I-Flo Corporation, Dept. PF, 400 Norwood Ave., Sturgis, Michigan.

Equipment: The Spin-Finish fixture-type barrel finishing machine, improved by the addition of a device that loads and unloads the fixtures, relieving the operator from the need for lifting fixtures.

Operation: A mechanical loading arm, pneumatically powered and hydraulically controlled, has a fork that fits under a collar on the fixture. The operator maneuvers the loading arm into position so that the fork fits under the collar. Then he pushes a button to control vertical motion and extends or retracts the telescoping arm to control horizontal motion.

Fixtures are kept on a rotary index table, which is also controlled by the

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APEX "RPS" Cleaning Compound
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for low-cost maintenance and production painting

Fits directly on original 5-gallon containers! **Air-powered pump operates at "2 to 1" ratio—delivers 2 lbs. of pressure at the spray gun for every 1 lb. of air pressure applied to pump. Provides ample material supply through long hose lines. Automatic, constant agitation.**

- Ideal for production operations and maintenance painting . . . in plants, shipyards and transportation shops!
- Handles a wide range of protective and finishing materials—lacquers, enamels, primers, sealers, vinyls, epoxys, urethanes, spray booth and strippable coatings!
- Easy portability . . . lightweight . . . compact design. No dollies required to move unit—even with a full container!
- No disassembly required for cleaning. Flushes clean quickly by operating pump in solvent. Faster color change-over—in minimum time, with minimum effort!

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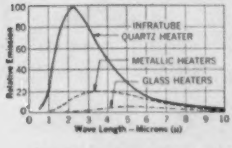
2.3 MICRONS is the wave length of infrared radiation most completely absorbed by practically all industrial materials. New Infratube Quartz Elements have been developed to give peak infrared emission at this optimum wave length.



Comparison of the emission curves of Infratube Elements with those of other near or far infrared sources. The high peak represents the maximum emission at the wave length most readily absorbed by most solvents and materials.

New Infratubes are available in lengths up to 72 inches, standard and special voltages, wattages up to 6000. Typical applications include fusing vinyl, curing resins, softening plastics, baking organic enamels, fusing vitreous enamel on aluminum, drying leather, textiles, paper and inks and as elements in high temperature ovens.

If you have a drying, curing, fusing or heating problem, investigate the advantages of Infratube Industrial Elements. Write for bulletin, now!

QUARTZ PRODUCTS CORPORATION

P. O. Box 628, PLAINFIELD, NEW JERSEY

For more data circle 357 on Postpaid Card

Grav-I-Flo's Spin-Finish Machine with Mechanical Loader: no need to lift fixtures

operator, while parts are being racked and unracked.

Further data on the Spin-Finish machine is available from the manufacturer.

For more data circle **7** on Reader Service Card

★ ★ ★

Epoxy Stripper

Manufacturer: Octagon Process, Inc., 15 Bank St., Staten Island 1, New York.

Material: Octastrip 144, a cold solvent stripper that will remove epoxy-based finishes.

How to Use: Octastrip 144 is used at room temperature in any mild steel tank that is in an adequately ventilated area. Product to be stripped is immersed for 15 seconds to one minute, then rinsed with water. Modified version of the solvent can be applied by brush to strip articles that cannot be immersed, or to strip only certain areas of a part. Manufacturer states that the stripper is non-flammable, will not attack metals, has long tank life. Data Sheet No. PS-144, available from the manufacturer, gives complete details.

Typical Applications: Stripping

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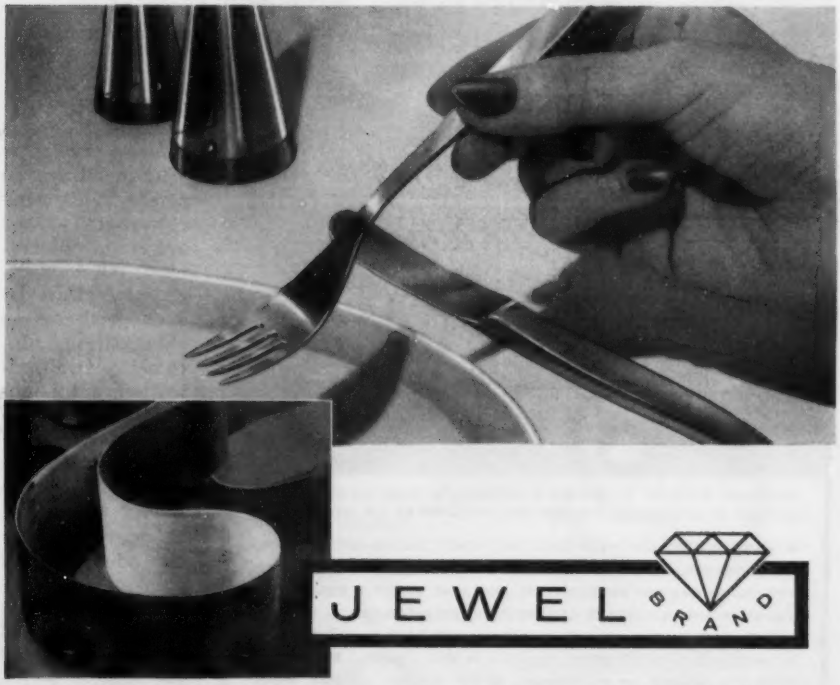
From the smooth feel of perfectly polished stainless steel tableware to the contoured grips on modern power tools, Jewel Brand Coated Abrasives are bringing fast, efficient grinding, smoothing and polishing to the manufacture of hundreds of products. Because *end products cost less when you finish with Jewel Brand Abrasives*, it will pay you to bring their many advantages to bear on your finishing problems. Order now from your Industrial Distributor or write for specific recommendations.



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epoxies, vinyls, urea-formaldehydes, other general industrial finishes.
For more data circle 8 on Reader Service Card

★ ★ ★

Inspection Label

Manufacturer: Pee Cee Tape & Label Co., 521 N. La Brea Ave., Los Angeles 36, California.

Material: A self-sticking label for inspection stamps, which, once applied to a clean, dry surface, cannot be removed without destroying the label. Brochure available from the manufacturer gives complete details.
For more data circle 9 on Reader Service Card

★ ★ ★

Chlorinated Compounds

Manufacturer: Diamond Alkali Co., Product Development Dept., Research Center, Painesville, Ohio.

Materials: Six chlorinated compounds recently developed by using para xylene as the raw material. All are available in semi-commercial quantities.

Description: Three of these products are ring chlorinated, three are chain chlorinated. All can react further in such processes as chlorination, chloromethylation, nitration, sulphonation and oxidation.

Uses: Chain chlorinated compounds are useful as chemical intermediates; the ring chlorinated compounds for the production of polyesters and polyethers, which are in turn used to produce paint, lacquers, enamels and other industrial finishes. The ring-chlo-

THE NEW VERSATILE NON-DESTRUCTIVE COATING-THICKNESS TESTER

DERMITRON

Unit Process Assemblies, Inc., pioneers in non-destructive testing and specialists in electronics for metal finishing, offer their latest DERMITRON D-2 with these features:

■ Measures plated coatings on steel, brass, copper, zinc die-cast, aluminum, bronze and other metals; also, nickel on steel. ■ Measures anodize and hard-coat on aluminum and magnesium; also, paint, porcelain, organic coatings on non-ferrous metals. ■ Measures metal coatings on plastics, ceramics and other non-metallic materials. ■ Available with FOUR measuring probes for extra-wide thickness ranges from thin to thick deposits. ■ Only 1/8" circle area required for measurement. ■ You get fast, accurate, direct readings, plus versatility and portability. ■ Sorts metals and alloys.

Write for latest brochure and questionnaire to help solve your thickness testing problems.

UPA

UNIT PROCESS ASSEMBLIES, INC.
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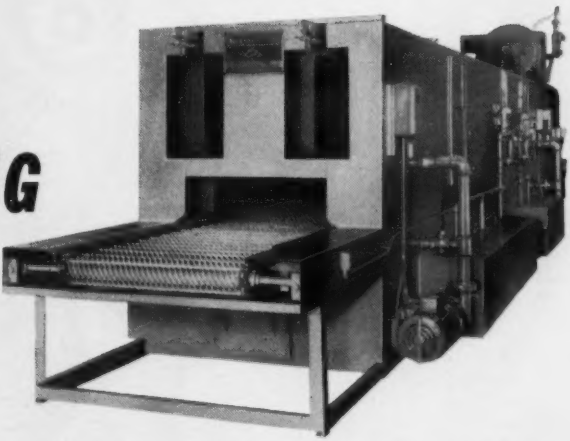
NEW A-F "3-IN-1" WASHING MACHINE

CUTS *METAL CLEANING* COSTS 50%



Because it is actually three machines in a single housing . . . using common tanks, spray systems, headers and drains . . . this new A-F "3-in-1" Washing Machine saves more than 50% not only in initial investment costs but also in operating and maintenance costs—over separate machines. In addition, this new A-F Washer provides for all cleaning operations in one efficient, central location . . . saves valuable floor space.

But that's not all! Two A-F Overhead Conveyors and an A-F Flat Wire Mesh Belt Conveyor carry parts through the automatically-timed wash-rinse-dry cycle and on to subsequent operations *without costly rehandling!* For example, one conveyor might take parts directly to assembly, another to painting. The conveyors can be operated simultaneously or independently.

With its two integrated, correlated engineering and manufacturing departments...one for cleaning and processing machines, the other for conveying systems . . . A-F is unique in being the one company able to offer you a completely coordinated system. Whatever your metal products cleaning and handling problem, A-F can provide you with a prompt, economical solution.

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Cleaning and Finishing Machines
Plant-wide Conveying Systems
Pre-Engineered Conveyors—Roller, Wheel, Belt, Trolley

THE ALVEY-FERGUSON CO., 616 Disney St., CINCINNATI 9, OHIO and Azusa, California

For more data circle 360 on Postpaid Card

rinated compounds are also expected to find use as solvents and flame retardents.

For more data circle 10 on Reader Service Card

★ ★ ★

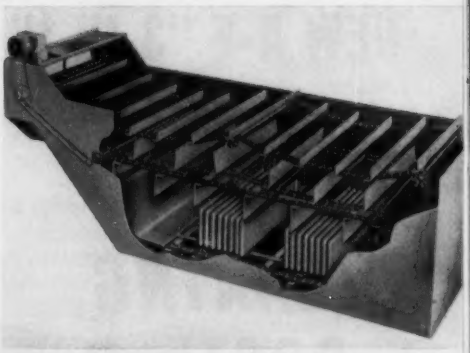
Self-Cleaning Filter

Manufacturer: Industrial Filtration Co., Dept. CF-312, Lebanon, Indiana.

Equipment: Delpark Dual-Manifold Filter.

Construction Features: Unit has dual manifold so that one manifold can filter while the other is being backwashed for cleaning. Backwash has pulsing action, which helps to loosen particles that adhere to the filter media.

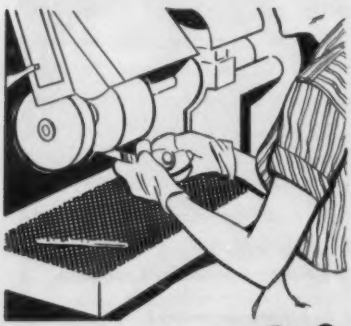
Leaf-type filter elements provide greater filter surface area. Natural, synthetic and metallic fibers may be used. Filter media is supported from the inside by a chain-link mesh.



Delpark Continuous Self-Cleaning Filter

Units are available with an additional set of "skimmer" flights, which remove excess foam created by extremely fine particle suspension. In recent tests, the manufacturer states, a filter so equipped received fluid con-

PROTECT FINE PLATED SURFACES



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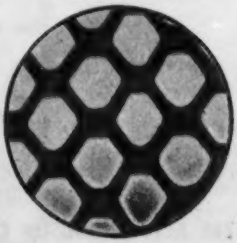
Neotex . . . the open pattern Neoprene rubber matting, protects highly polished finishes when used to line any surface where goods are worked on or in transit. In roll form, Neotex can be easily cut to any size or shape . . . it's rugged and long lasting, resistant to abrasives, caustics, heat, acids, oils, oxidation. Open pattern permits buffing compounds to settle. Available in a fine or coarse pattern. Write for complete information.

RP Neotex



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- Completely dry process . . . no lubricants
- Dust and fume free . . . no exhaust systems
- No set-up time required

Wipe the slate clean of all present concepts of speed, efficiency and costs in pre-plating finishing of brass, zinc-base and aluminum die-cast parts! In one short, automatically-timed operation—and on a *multiple mounting* of parts—new SPIN-FINISH produces surfaces and lustre equal to or surpassing that of buffing. Write for information.

GRAV-I-FLO CORPORATION

Dept. PF-3 • 400 Norwood Avenue, Sturgis, Michigan

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taining 25 per cent by volume of solids and removed all but 0.2 per cent. With this volume of solids removed, 1,000 pounds of sludge were removed by filter every 6 minutes.

Units are available with flow capacities of five to 1,000 g.p.m.

Uses: Suitable for filtration of water from wet-type dust collectors.

For more data circle 11 on Reader Service Card

Ceramic Gold Finish

Manufacturer: The Bettinger Corporation, Waltham, Mass.

Material: A gold ceramic finish.

Description: 22-carat gold dust is incorporated in a ceramic finishing material. This ceramic is then fired onto the surface of the metal being finished. Only a thin coat is necessary, since the ceramic is a durable finish. The thin application conserves on the amount of gold used, making this gold finish economically feasible.

Uses: Panels used in curtain-wall construction, gasoline - pump covers, other applications where a gold finish is desired.

For more data circle 12 on Reader Service Card

★ ★ ★

Tank Magnet

Manufacturer: Belke Manufacturing Co., 947 N. Cicero Ave., Chicago 51, Illinois.

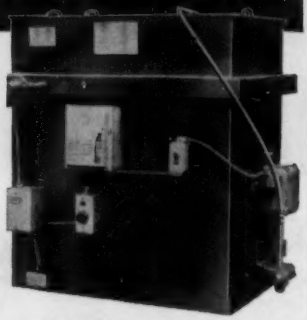
Equipment: Multiple - Unit Permanent Tank Magnet.

Description: Several permanent magnets mounted so that ferrous pieces lost in plating tanks can be recovered. Available with one to three magnets with or without support wheels.

Applications: Removing pieces

Aircon

VAPOR DEGREASERS



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Aircon Vapor Degreasing Systems are available in a complete line, ranging in size, from the smaller bench and barrel-type units to the larger, permanent, high capacity degreasers.

Aircon Degreasers are:

Gas, Electric or Steam Heated

Complete Units with all safety equipment

NO EXTRAS TO BUY

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WE ARE DESIGNERS AND ENGINEERS OF SPECIAL DEGREASING EQUIPMENT. CONSULT US ON YOUR DEGREASING PROBLEMS.

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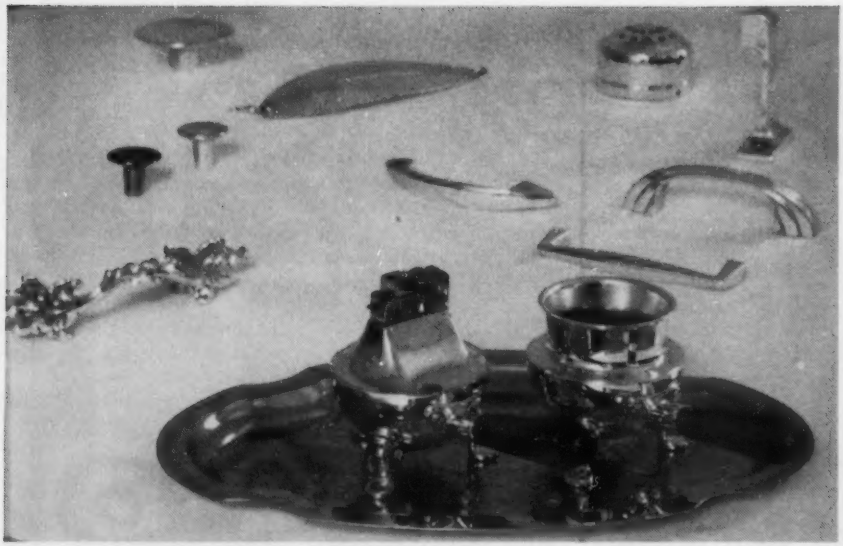

Plated under vacuum, these articles have a high-sheen surface that lasts as long as conventionally plated pieces.

Why plating with **vacuum** *is easier and more profitable*

Without buffing, polishing, cleaning baths, or highly skilled help, you can now plate articles with a shimmering finish that lasts indefinitely.

Vacuum-plating costs less. With a CEC vacuum coater and unskilled labor you can plate thousands of pieces per day—to look like gold, silver, copper, or a multitude of other colors and tones.

New longer-lasting lacquers make many vacuum-plated articles wear as well as those plated conventionally. The stayfast finish requires no retouching, or buffing, or polishing—just an easily applied coat of lacquer.

Write for information on CEC coaters.

Consolidated Electrodynamics

Rochester Division, Rochester 3, N.Y.

formerly Consolidated Vacuum

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COLORS MATCHED—with no variance in quality, color, or lustre from batch to batch. Fast service guaranteed.

SPECIAL COLORS—Over 25 years experience in creating special colors and shades for the plastic and metal finishing trades, on request. Satisfaction assured.

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1841 S. Flower St., Los Angeles 15

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that fall off racks into plating tanks; separation of iron from nonferrous metal chips.

For more data circle **13** on Reader Service Card

★ ★ ★

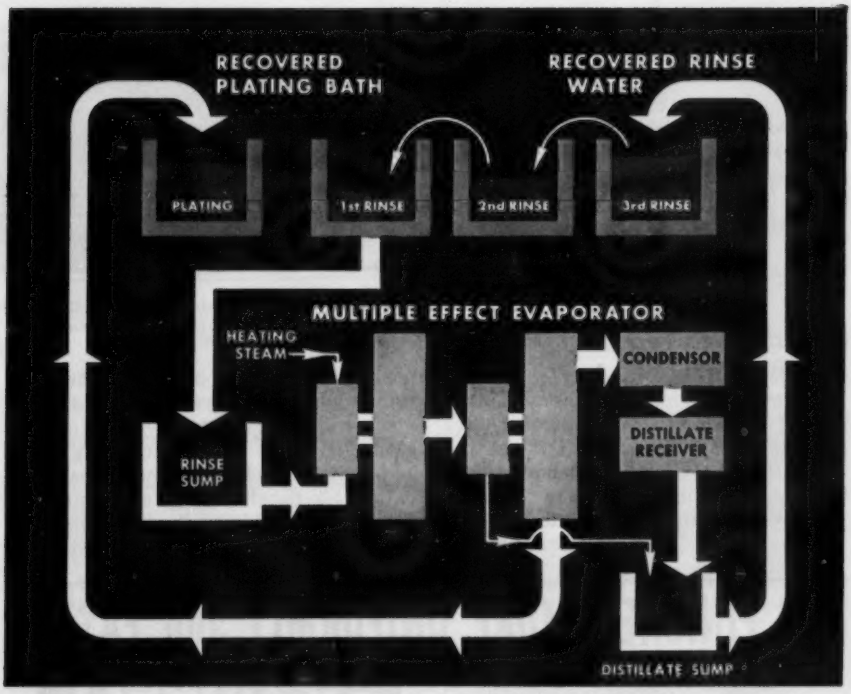
Segmented Polishing Roll

Description: A segmented rubber roll for flat polishing allows the roll to be repaired or replaced on the job. Damaged segments can be replaced without recovering the entire roll. When all or part of the roll has to be replaced, only the segments are shipped; the core itself always remains with the machine.

Another advantage of this roll, the

***Segmented Polishing Roll:* segments permit easier replacement of all or part of a roll**

manufacturer points out, is that the segments are molded, thus allowing the use of materials that are tougher than could be used if the serrations had to be cut into the roll.



New recovery system cuts plating costs!

Industrial's Plating Bath Recovery Equipment provides complete recovery of acid and metal drag out losses, using a rapid evaporation process engineered to suit your operation. The savings can be fantastic . . . the system not only returns fresh plating solution to the bath and pure water to rinse tanks . . . it eliminates the high cost and trouble of neutralizing corrosive rinse water for disposal. In a typical case the replacement of solution and destruction of rinse water cost $12.46 per hour. **The Industrial System recovers the bath at a cost of $2.13 per hour.**

Unbelievable? . . . **No sir!** . . . these are systems designed by a company with a 30-year reputation for building the best in plating equipment. Let us prove it—our staff will be glad to make an analysis of your process, recommend equipment and estimate costs and savings.

Send for complete data

INDUSTRIAL

FILTER & PUMP MFG. CO.

5904 Ogden Ave., Chicago 50, Ill.

Please send me reprints of articles and literature on Industrial's Plating Waste Recovery Systems.

NAME_____

TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

For more data circle 365 on Postpaid Card

Applications: Rolls for roughing, semi-finishing and finishing operations. Same principle can be applied to the manufacture of pinch rolls, conveying rolls and feed rolls.

Manufacturer: Chicago Rubber Co., Inc., 651 Market St., Waukegan, Ill.

For more data circle 14 on Reader Service Card

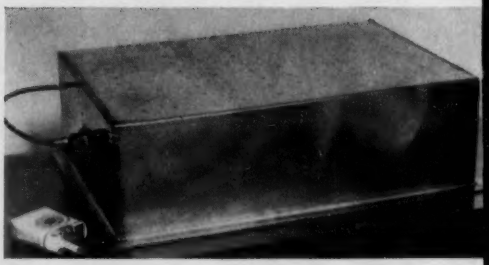
★ ★ ★

Ultrasonic Cleaning Equipment

Manufacturer: The General Ultrasonics Company, 67 Mulberry St., Hartford 3, Conn.

Equipment: Ultrasonic processing equipment equipped with a recently patented transducer element.

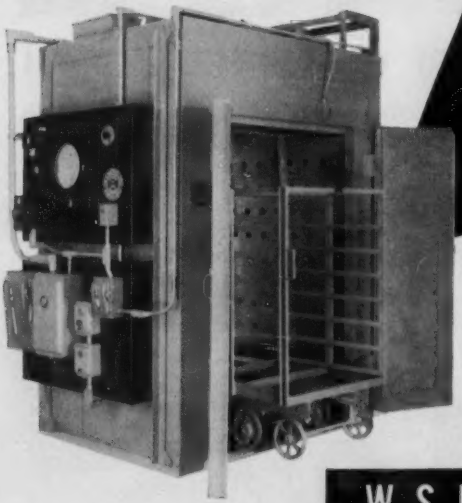
Description: A transducer element



General Ultrasonics' Patented Stainless Steel Immersion Sonicell: it's more rugged

constructed mainly of solid metal sections, which are joined to stainless steel radiating surfaces by welded studs, supplies ultrasonic energy for self-contained cleaning machines with capacities ranging from six quarts to fifty gallons. This method of construction is said to result in a unit that

DRY FINISHES MORE UNIFORMLY and FASTER



ROCKWELL recirculating OVENS

You get complete product uniformity —high speed drying—and full operating safety in Rockwell Standard Recirculating Ovens.

Made in cabinet and truck or rack types — gas, electric, oil or steam heated — with interlocked temperature, heating and recirculating safety system. Wide range of sizes.

Conveyor ovens are built to special operating requirements.

W. S. ROCKWELL COMPANY

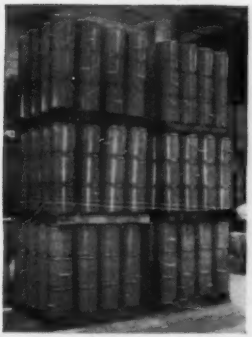
2908 Eliot Street • Fairfield, Conn.

For more data circle 366 on Postpaid Card

Greater convenience for you!

HARSHAW NOW SHIPS FLUOBORATES IN NON-RETURNABLE CONTAINERS

Harshaw's use of this 5-gallon polyethylene-lined steel pail brings important benefits to you:



Convenient Stacking

YOU SAVE MONEY!

- No containers to return
- No records to keep
- No container deposit
- No return freight charges
- Less freight on incoming shipments

YOU SAVE WORK AND TIME!

- Light container—easy to handle even when full
- No special pouring equipment needed
- Built-in (pull out-push in) spout
- Specially designed for easy stacking

Pull Out-Push In Spout

These Harshaw fluoborate chemicals are now shipped in non-returnable containers:

Cadmium Fluoborate Solution
Copper Fluoborate Solution
Fluoboric Acid • Hydrofluosilicic Acid
Lead Fluoborate Solution
Nickel Fluoborate Solution
Tin Fluoborate Solution • Zinc Fluoborate

Enter your order today—the same high quality Harshaw fluoborates, and in a convenient new container.

THE HARSHAW CHEMICAL COMPANY

1945 E. 97th Street • Cleveland 6, Ohio

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CLEVELAND, OHIO
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HOUSTON, TEXAS
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Simultaneous Action...

CLEANS . . .

RUSTPROOFS . . .

PHOSPHATES . . .

METACOTE is the NEW and OUTSTANDING process for anchoring paint to metal surfaces. It PHOSPHATES as it RUSTPROOFS as it CLEANS. Spray or dip . . . no special equipment needed.

METACOTE prevents paint failures on practically all metals and metal alloys. Formulated by metal engineers, METACOTE'S merits are being "proved" daily in some of the country's largest industrial plants.

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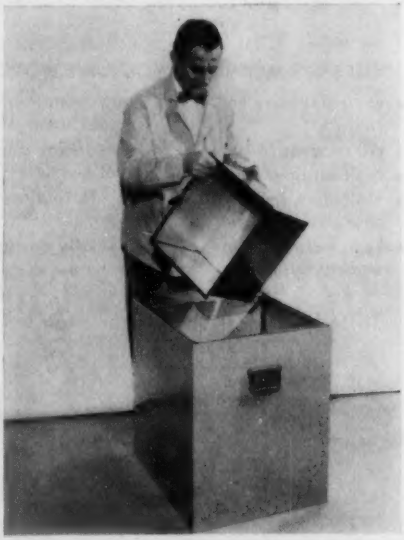
Metasurf
CHEMICAL PRODUCTS FOR TREATING METAL SURFACES
CORPORATION
12830 EATON
DETROIT 27, MICHIGAN
BRoadway 3-3880

For more data circle 368 on Postpaid Card

has better resistance to mechanical damage.

Transducers are available built into tanks or as separate units for installation in existing tanks or for multiple use in larger tanks. Their efficiency allows them to be powered by relatively small generators, according to the manufacturer.

Applications: Cleaning ball bearings, optical goods, watch parts, gears, precision mechanical components; to remove buffing compounds, greases, waxes, paint films, inks, chips, fluxes, light oxides.



A 30-Gallon Ultrasonic Cleaning Tank used for removing dirt from a sheet metal part

For more data circle 15 on Reader Service Card

★ ★ ★

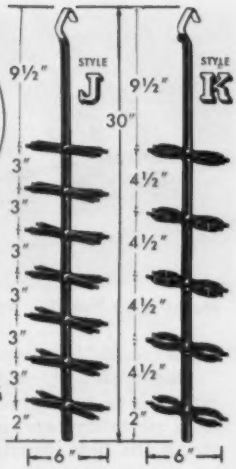
Portable Abrasive Belt Polisher

Manufacturer: Abrasive Machinery Corp., Dept. 294, 444 S. Pennsylvania St., Indianapolis 4, Indiana.

Equipment: Model 2-42 Portable

New, Ready Made Mass-produced Economy Plating Racks

STYLE L
7⅜
$4.50



STYLE J
9½"
30"
3"
3"
3"
3"
3"
3"
2"
6"
Tips 1/16x1/2"
$6.50

STYLE K
9½"
4½"
4½"
4½"
4½"
4½"
4½"
2"
6"
Tips 1/16x1/2"
$5.75

36" lengths available

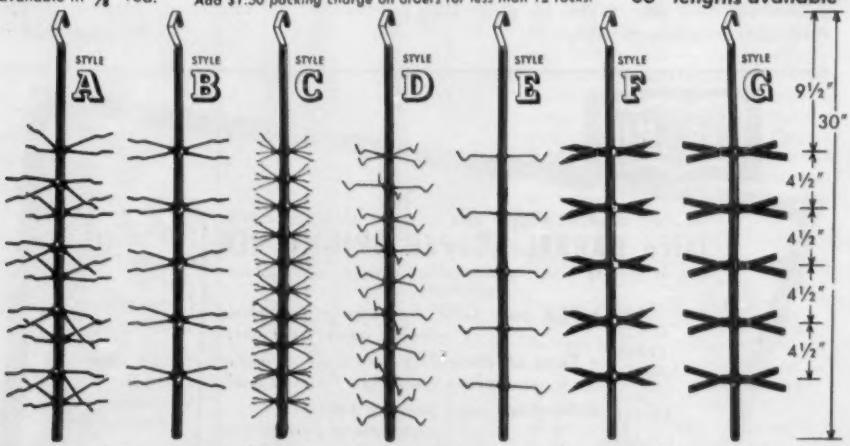
STYLE M
Insulated "S" Hooks
9"

¼" copper rod
heavy plastisol coat
Less than 100, $.45
100 or more .40
available in ⅛" rod.

STYLE H
8⅝
For Wired Work
2" centers
12"
$2.45

Straight .093 dia. phosphor bronze wires; 8" long, 1½" centers. Wires easily shaped or shortened.

Add $1.50 packing charge on orders for less than 12 racks.



STYLE A
6½"
Tips .114" dia.
$5.78

STYLE B
7½"
Tips .114" dia.
$4.77

STYLE C
4½"
Tips 1/16" dia.
$6.00

STYLE D
6½"
Tips 3/32" dia.
$5.83

STYLE E
6½"
Tips 3/32" dia.
$4.42

STYLE F
7½"
Tips 1/16x1/2"
$5.84

STYLE G
7½"
Tips 1/16x1/2"
$5.69

9½"
30"
4½"
4½"
4½"
4½"

Spines one-piece solid copper round cornered and sand blasted. Tips phosphor bronze, riveted to spine and soldered when necessary for complete rigidity. Coated after assembly with BELKE Universal Plastic.

Belke MANUFACTURING COMPANY
947 Cicero Ave., Chicago 51, Ill.
EVERYTHING FOR PLATING PLANTS

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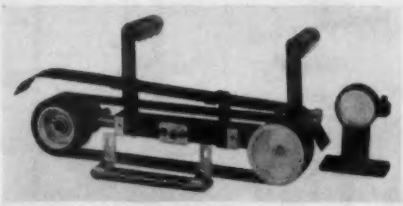

Model 2-42 Portable Abrasive Belt Polisher

Abrasive Belt Polisher.

Description: Unit may be used as a portable or fixed machine. When used as a portable hand-held unit, flexibility of the belt permits it to polish flat or convex surfaces. An accessory for supporting the belt may be used to give added rigidity when polishing flat surfaces. Six different handle adjustments can be made to give the unit maximum versatility.

Model 2-42 is powered by a 1/12-h.p. motor, which gives the belt a maximum speed of 6,000 s.f.p.m. It uses 2-inch-wide abrasive belts.

Replacement of belts is made by pressing against a spring-loaded idler wheel assembly, which releases the belt and allows the new one to be put in place.

For more data circle **16** on Reader Service Card

★ ★ ★

Dust Collector

Manufacturer: Schmieg Industries, Inc., 23930 Sherwood, Centerline, Michigan.

Equipment: Vertical-Rotor Dust and Fume Eliminator, a relatively low-priced wet-type collector.

Operation: Contaminated air enters the collector at relatively high velocities. A cyclonic action set up in the unit's outer chamber causes larger

To page 118→

JELCO

—for the Brightest Copper ever . . . right out of the barrel!

Jelco BARREL COPPER BRIGHTENER

Can be used in your present regular solution with standard equipment

—Also available JELCO BRASS Additive and BARREL NICKEL Brightener

- ***The only ONE brightener required —cuts operating costs***
- ***Tops in throwing power—produces complete coverage immediately***
- ***Doubles your plating rate— increases production***
- ***Eliminates cyanide fumes***

A Proven Process . . . Used successfully by manufacturers and job platers

The latest advance in Barrel Copper Plating

Non-Critical Cuts Rejects Boosts Production

Write for complete information

For the "Solution to your Plating Problems" . . . Come to

JELCO FINISHING EQUIPMENT CORP.

153 EAST 26th STREET • NEW YORK 10, N. Y.

Telephone: LExington 2-3055

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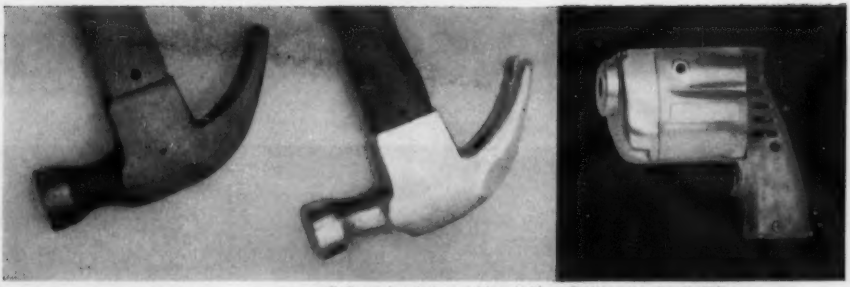
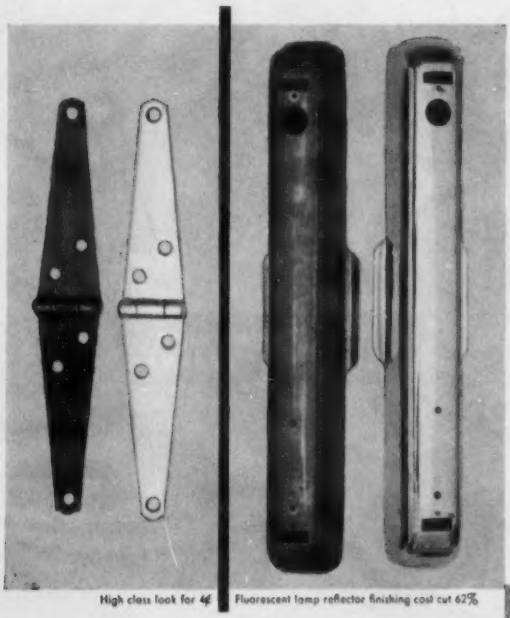


Shelf appeal can be increased for only 3¢ Finishing costs reduced to 12¢

If It Looks Good... It Sells Better



High class look for 4¢ Fluorescent lamp reflector finishing cost cut 62%

If you're looking for a way to increase the sales appeal of your products by adding a quality appearance at low cost, you should investigate vacuum coating.

While this modern process is not a cure-all, most likely you'll find it will add new life to the items you manufacture — and may cut your costs spectacularly, too! Brilliant, eye-catching, metallic finishes, in a wide range of colors, can be applied on plastics, metals, wood, glass, paper, fabrics and many other materials. Today's vacuum coatings are brighter than buffed and polished electroplating, cost less, and in some applications stand up better.

You don't have to take chances, either. Send us a sample of your product and give us details about its use. We'll tell you whether your application is a good one, show you how your product will look, and estimate your costs. Then, if you want, we'll supply a complete installation, guarantee its output, show you how to run it efficiently, and even train your operators. Write us today!

A Subsidiary of National Research Corporation

DEPT. 23Q, CHARLEMONT ST., NEWTON, MASS.

NRC

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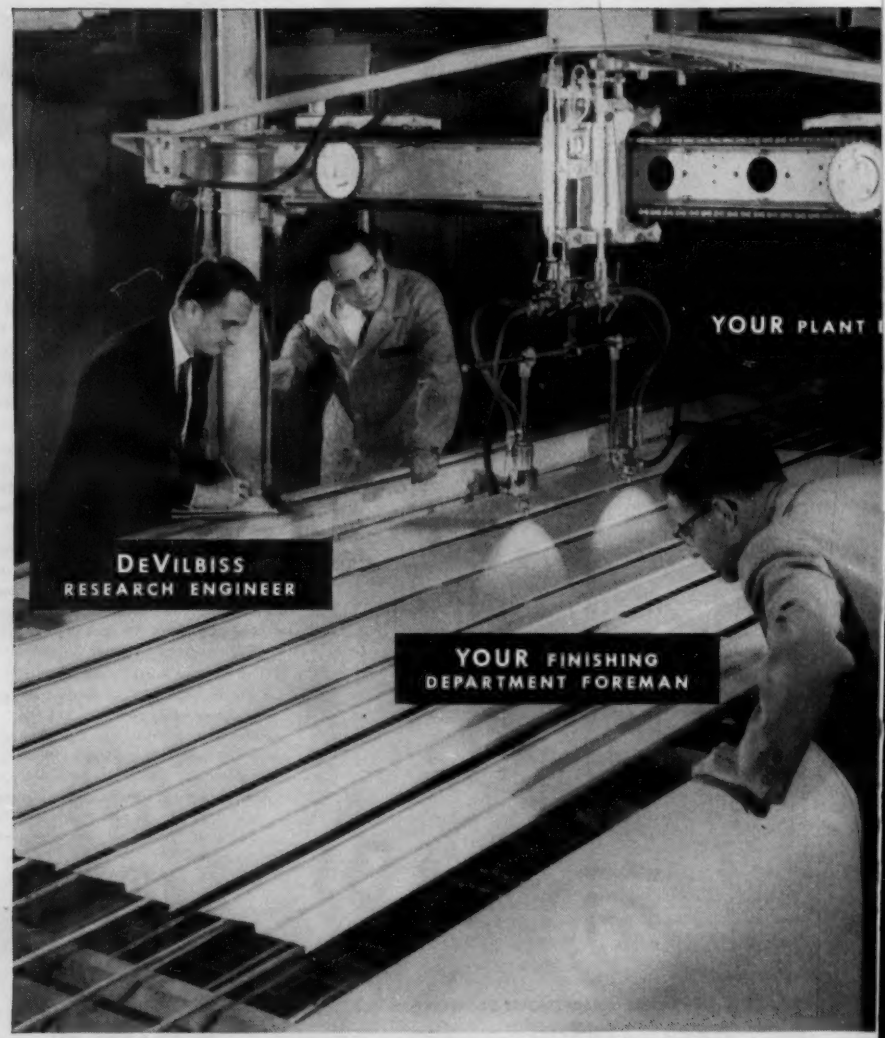
EQUIPMENT CORPORATION

For more data circle 371 on Postpaid Card

Try automatic painting



Your staff can see your product painted on DeVilbiss automatic machine under simulated plant conditions.

before you buy!

A test run in the DeVilbiss research laboratory gives you facts to guide your decision

The only way to be sure if change-over to fully automatic painting is the *right step* is an actual test under identical production conditions and using the exact materials you normally apply.

That's why more and more manufacturers are having us schedule trial production runs in our fully equipped research laboratory.

Working to your coating specifications, we duplicate your plant conditions in every possible way.

Then we test-run your product on the best suited standard automatic spray machine. Your supervisors are invited to be there; results are passed along to you.

Thus, you know *before* making any equipment purchases or shop modifications if it will pay you to paint automatically!

To arrange a test run, contact your nearest DeVilbiss representative or write us in Toledo. DeVilbiss offers automatic spray machines for painting products of practically any size or shape, and for use with most conveyor systems . . . the *only* automatics capable of spraying inside deep cavities, as well as uniformly coating exterior surfaces.

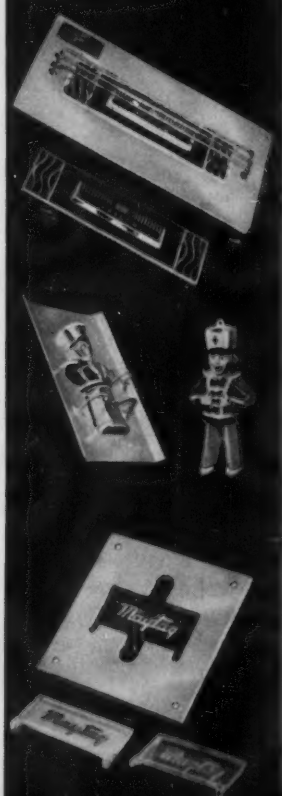
THE DEVILBISS COMPANY
Toledo 1, Ohio
Barrie, Ontario • London, England
Branch Offices in Principal Cities

FOR BETTER SERVICE, BUY
DEVILBISS

For more data circle 372 on Postpaid Card

FIORE

MASKS FOR PRECISION PAINTING



Fiore Spray Masks are used on plastics, stampings and die-castings that have depressed or raised detail and on any other irregular shaped surface. If a product can be molded, stamped or die-cast, it can be decorated by Fiore spray masks.

Over ten years many manufacturers have been decorating their products by using Fiore spray-masks, associated jigs, fixtures and spray machines. Fiore Spray Masks and accessories are simple to use. An unskilled worker can operate them without special training and obtain perfect duplication and greater speed at a minimum cost.

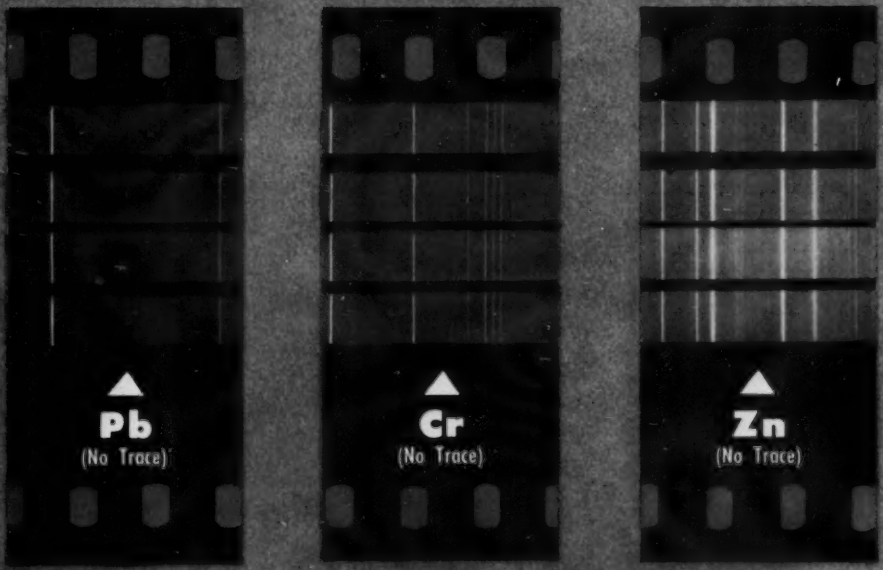
Send for your free copy of our 20 page book. Or, send your samples and drawings for consultation and estimates.

WM. M. FIORE, INC.

269 - 41st STREET BROOKLYN 32, NEW YORK

For more data circle 373 on Postpaid Card

COPPER CYANIDE



Spectrographic Analysis PROVES CP's Copper Cyanide CONSISTENTLY Free From Impurities

Whenever you use CP's Copper Cyanide you can be *sure* of its purity and dependability . . . because every batch is carefully tested.

The photographs above illustrate the absence of any trace of lead, zinc or chromium. This film record is typical. In addition, our Copper Cyanide is completely free of sulphur or organic contamination. In tests run on production samples over an 18 month period, no deviation in purity was noted. The quality of all our products is constantly checked both by spectrographic analysis and under actual working conditions. Our own findings are confirmed by tests on a typical production sample by an independent laboratory, Ledoux & Company.

As domestic producers, we offer reliability of source, through conveniently located distributors.

Investigate the advantages of CP's Copper Cyanide. We will be happy to send you a copy of Ledoux' Analysis Report and a sample for your own testing, without obligation of course.

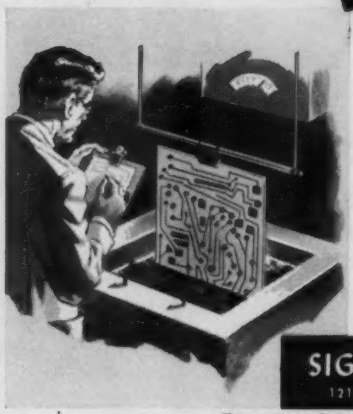
CP COPPER PIGMENT & CHEMICAL WORKS, INC.

212 Bayway, Elizabeth 2, New Jersey

For more data circle 374 on Postpaid Card

Specialists in the Unusual
SINCE 1901

Rhodium
ELECTROPLATING SOLUTIONS



Technological knowledge acquired through many years of experience, plus special processes and equipment, assure the high quality of our Rhodium Plating Solutions.

Recommended for contact surfaces of switches, waveguide parts and other electrical applications, such as printed circuits...Can be applied in extremely heavy deposits, up to 100 milligrams per square inch.

Rhodium plating provides the advantages of whiteness, lustre and corrosion resistance of a precious metal.

Consult our staff, without obligation, about your specific plating problems.

SIGMUND COHN MFG. CO., INC.
121 SOUTH COLUMBUS AVENUE · MOUNT VERNON NEW YORK

For more data circle 375 on Postpaid Card

NO HEAT!

Not disc—not orbital a completely NEW sanding action!

• CUTS 5 TIMES FASTER • NO TRACKS
• NO DUST • NO LOADING • SAVES 75% ON ABRASIVES

Easy DUAL-ACTION SANDER DOES ALL THE JOB

Can't be beat for hundreds of metal jobs. From welds and white metal slick-up to mirror finishes.

DSM DETROIT SURFACING MACHINE CO.

Make us prove it—ask for literature or a trial!

1266 East Eight Mile Road, Detroit 20, Michigan
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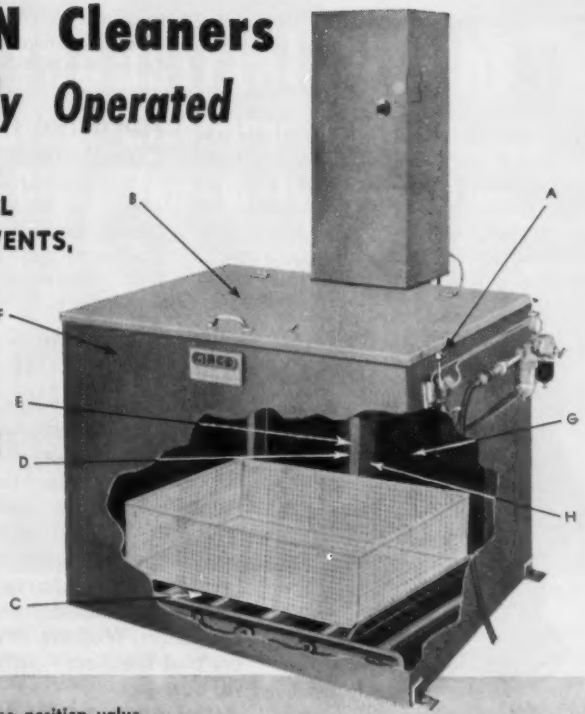
AGITATION Cleaners
Pneumatically Operated

FOR USE WITH ALL CLEANERS — SOLVENTS, EMULSIONS, PHOSPHATIZING AND ACID SOLUTIONS FOR HEAT TREATING, QUENCHING, WAX AND PROTECTIVE COATING AND OTHER LIQUID PROCESSING.



A. Only one control—three position valve. 1. raises rack. 2. lowers rack for soak. 3. agitates rack.

B. Hinged steel cover. Fusible link causing lid to drop in event of fire, optional.

C. Supplied with grate platform. Roller rack platform available.

D. Length of up and down stroke variable from 4" to 27"

E. Number of strokes variable from 32 to 70 per minute.

F. Tank shell is fabricated of solid heavy gauge hot rolled steel.

G. Available with immersion heating choice of steam - gas or electric.

H. The same air operated piston lowers, raises and agitates the rack.

Since 1923

CIRCO EQUIPMENT COMPANY

Write for New 4-page Brochure with Complete Information on All Models.

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Offices and Representatives in Principal Cities

For more data circle 377 on Postpaid Card

particles to drop into a tank. The air stream next passes through a vertical water curtain, which eliminates heavier particles, then through a horizontal water curtain that removes finer particles. A series of baffles remove moisture from the air before returning it to the working area or venting it to the outside. Full information is given in Bulletin VRU-4-57, available from the manufacturer.

For more data circle 17 on Reader Service Card

★ ★ ★

Abrasive Finishing Compound

Manufacturer: Lord Chemical Corporation, 2068 S. Queen St., York, Pennsylvania.

Description: Lorco "3X" is a tumbling compound formulated to give faster cutting than Lorco "4X" and yet be suitable for use on non-ferrous metals. It is a mild, relatively soft abrasive powder. May be used with any chemically inactive media or in self-tumbling of parts. Low water levels are recommended for most applications.

Typical Uses: Finishing soft metals; for cleaning and surface finish refinement after long cut-down cycles on harder metals. Will do a good job of removing films and skins on die cast parts.

For more data circle 18 on Reader Service Card

★ ★ ★

Stripper

Manufacturer: Beck Equipment Co., 3350 West 137th St., Cleveland 11, Ohio.

BETTER FINISHING AT LOWER COST

See the proof! Submit samples of your product to us for laboratory finishing. We guarantee you'll get the same results with our galvanizer in your plant. Get complete information on Barrett Centrifugal Galvanizers, Enamelers, Washers, Dryers and Breakers — write for our

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✓ Standard Units
✓ Special Units
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CENTRIFUGAL
GALVANIZER

Up to 60,000 lbs. of work in 8 hours

•

Uniform coating maintained within thousandths

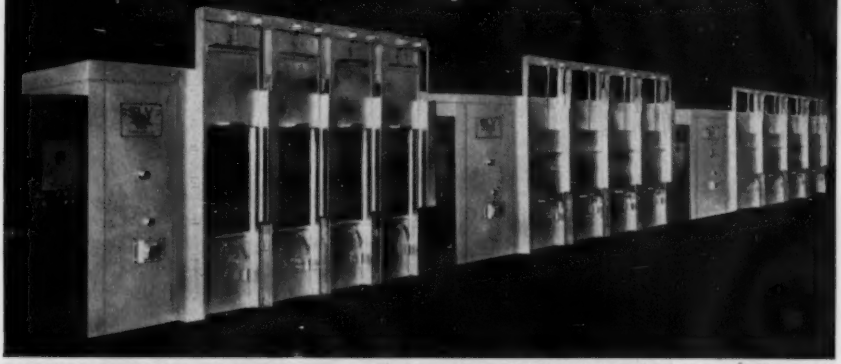
•

Saves labor — eliminates hand-shaking small parts

THE LEON J. BARRETT COMPANY
1449 Grafton Road
WORCESTER, MASSACHUSETTS, U.S.A.
For more data circle 378 on Postpaid Card

SLY Industrial Ovens

Give Better Electrical Coatings Through Close Temperature Control



Remarkably compact, each oven measures 10'-6" wide by 6'-0" high by 3'-8" deep—14' overall.

A leading manufacturer of transformers needed ovens to cure the products' plastic coating. Close temperature control was required; floor space was limited.

The problem was solved by installing Sly batch type ovens — three individual ovens with four compartments per unit, in line.

Each oven has its own direct gas-fired air heater and is complete with its own temperature and safety control system.

The ovens are equipped with overhead lift doors — 2' wide by 3' high — for manual loading and unloading. The transformers, on pallets, enter on gravity type roller conveyors. When a door is opened, an automatic damper closes off the heat supply for operator comfort. When door is closed, the damper is automatically opened to allow heated air to pass over the work.

Shop-assembled, the ovens required a minimum of labor to install.

Close temperature control with economies in efficient use of available space plus savings in installation and operation were achieved in this case — typical of Sly. Ask for Bulletin 200 and let's discuss your problem.

Designers and Manufacturers of: Dust Control Systems, Industrial Ovens, Blast Cleaning Equipment, Tumbling Mills.

SINCE 1874 SLY

THE W. W. SLY MANUFACTURING CO.

4784 TRAIN AVENUE • CLEVELAND 1, OHIO

OFFICES IN PRINCIPAL CITIES

For more data circle 379 on Postpaid Card

Material: Epoxystrip, a stripper especially formulated to remove epoxy-based finishes.

How to Use: Part to be stripped is immersed in Epoxystrip for 20 seconds. Finish swells and pops off, after which it is rinsed off with water, leaving the part ready for refinishing after drying.

Applications: Stripping epoxies and other tough finishes from metal parts.

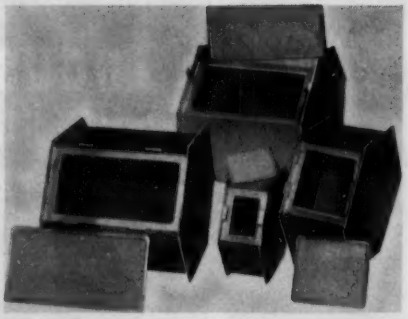
For more data circle **19** on Reader Service Card

★ ★ ★

Tumbling Barrels

Manufacturer: Rampe Manufacturing Co., 14915 Woodworth Ave., Cleveland 10, Ohio.

Equipment: Orange-colored, vinyl-plastic-lined tumbling barrels.



Rampe Tumbling Barrels: orange linings

Features: Plastisol lining has no seams, is smooth and easy to clean. Orange color makes it easier to see what's going on inside the barrels. Linings resist chemicals, oils and abrasion.

For more data circle **20** on Reader Service Card

"PROMAT MEANS PROTECTIVE MATERIALS"

PROMAT: YOUR BEST SOURCE OF METAL FINISHING PROCESSES

HERE'S WHY — For almost twenty years PROMAT has been supplying the metal finishing industry with the finest in chemical products and processes relating to the finishing treatment of metals. • PROMAT manufactures an unexcelled line of ZINC BRIGHTENERS, CADMIUM BRIGHTENERS, ELECTROPOLISHES, ANTI-FOAM AGENTS, DOCTOR'S SOLUTION, CLEANERS, RUSTPROOFERS, and CHROMATES.

TECHNICAL ASSISTANCE — is yours for the asking from PROMAT'S service department where highly skilled technicians stand ready to serve you in the solution of any metal finishing problem you may have.

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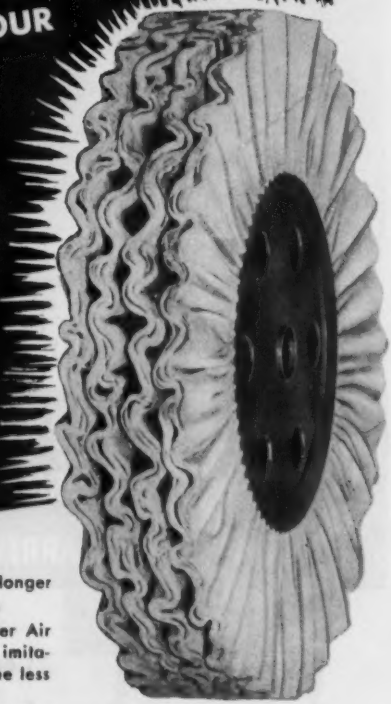

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COMPOUNDS MADE IN BAR, SPRAY OR PASTE

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Lightweight Spray Guns

Manufacturer: Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Illinois.

Model 35

Equipment: Models 35 and 36 lightweight spray guns.

Description: These two spray guns are supplied with external-mix nozzles so that it is possible to spray fast-dry lacquers without excessive build-up on the nozzle. Model 35 can be used with either siphon or pressure cup; Model 36 is best suited for use with a fluid pressure tank. Both models can be used with compressors rated up to one h.p.

Applications: General maintenance and short-run paint jobs.

For more data circle **21** on Reader Service Card

★ ★ ★

Silicon Rectifiers

Manufacturer: Wagner Brothers, Inc., Equipment Div., 7800 Dix Rd., Detroit, Mich.

Equipment: Plating rectifiers that use silicon as the semi-conductor element.

Features: Rectifiers that use silicon as the semi-conductor element are said to require less maintenance. The silicon semi-conductor does not age or deteriorate, the manufacturer states. Silicon also is said to have a high efficiency rating and to operate well at high voltages. Its high voltage rating also makes it less sensitive to voltage transients, Wagner states.

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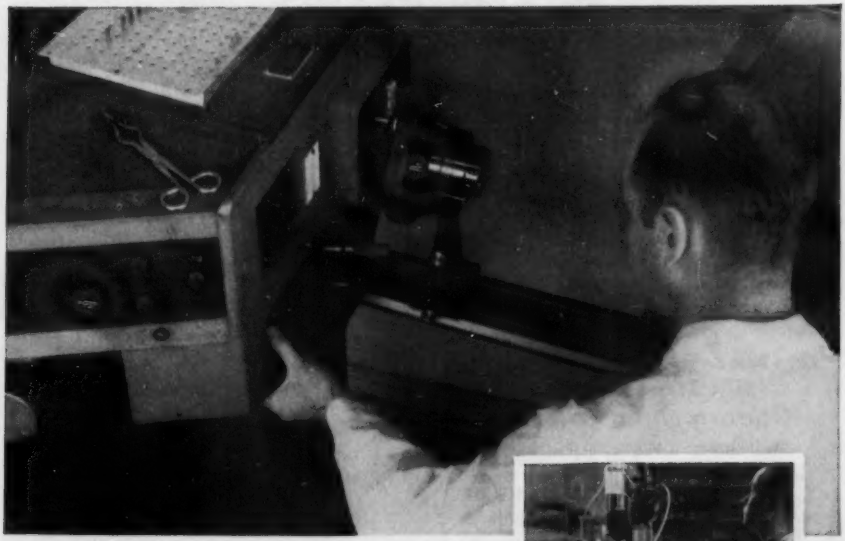

"Al, you must be crazy . . ."

"A few years ago we decided to make our Quality Control Lab as good as could be found anywhere. We staffed it with first rate people and bought the latest in equipment including the finest Spectrographic Instrument available. At this point, our accountant — you know the type — a nice enough guy, but never happy unless he's shaking his head and wiggling his fingers at you . . . said to me, 'Al, you must be crazy, putting all this money into Quality Control.'

"Well, it took a lot of doing — and plenty of dollars, but it was worth it. We've grown steadily and it sure is a nice feeling to know that many of our regular customers include the finest platers in the country.

President

Illustrated are several views of our all new Wet and Spectrographic Laboratories, including some of the finest quality control equipment available.

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Another desirable property of silicon is that it permits the rectifier to be used where the surrounding temperatures are as high as 200 deg. F. without damaging the equipment.

For more data circle **22** on Reader Service Card

★ ★ ★

Anodizing Racks

Manufacturer: Service Screw Products Co., 131-C N. Green St., Chicago 7, Ill.

Equipment: A kit with identical aluminum and titanium anodizing racks, to be used in production, for comparison.

Description: "Production Kit" contains workholders that are identical except for the metal of construction — titanium or aluminum. By splitting a job between racks of the two metals, a manufacturer can determine relative merits of each type—costs, production quality, ease of use, and so on.

Service Anodizing Rack

Both the titanium and the aluminum workholders can be reassembled or revised to accommodate various types of parts.

For more data circle **23** on Reader Service Card

★ ★ ★

Buffing Compound Remover

Manufacturer: Conversion Chemical Corp., Rockville, Conn.

Material: Kenvert Sluff-Off, a synthetic detergent that is effective in re-

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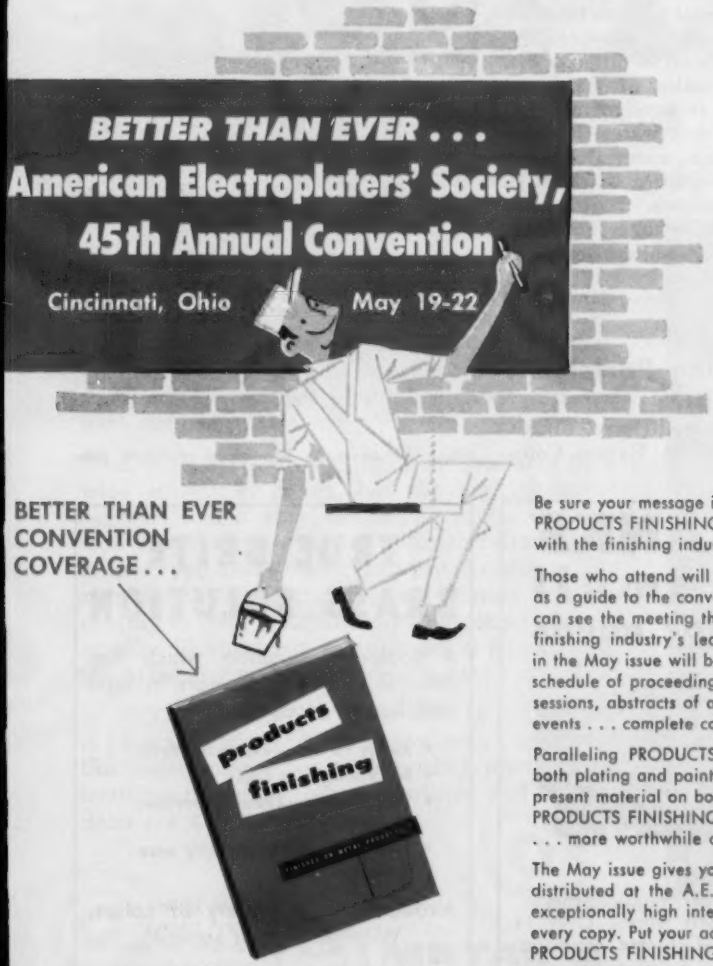

Be sure your message is seen in the May issue of PRODUCTS FINISHING, where it will share space with the finishing industry's most eagerly read news.

Those who attend will use PRODUCTS FINISHING as a guide to the convention. Those who do not, can see the meeting through the eyes of the finishing industry's leading publication. Featured in the May issue will be: previews of meetings, schedule of proceedings, summaries of technical sessions, abstracts of all papers, personalities and events . . . complete coverage of the convention.

Paralleling PRODUCTS FINISHING's coverage of both plating and painting, this A.E.S. meeting will present material on both finishing fields. Every PRODUCTS FINISHING issue gives double coverage . . . more worthwhile circulation at the lowest cost!

The May issue gives you extra circulation distributed at the A.E.S. meetings . . . *plus* exceptionally high interest and readership for every copy. Put your advertising story before PRODUCTS FINISHING's readers . . . at the convention and at home . . . for maximum results!

Regular rates apply. Make your space reservation now. Closing date is April 15th.

PRODUCTS FINISHING

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moving buffing compounds.

Properties: Solutions of this detergent reduce interfacial tension between compound and metal, allowing the compound to slough off in large sheets, the manufacturer states. May be used on ferrous or non-ferrous metals. Effective in hard or soft water. Ferrous parts treated in this material have a tendency to resist rusting, it is stated.

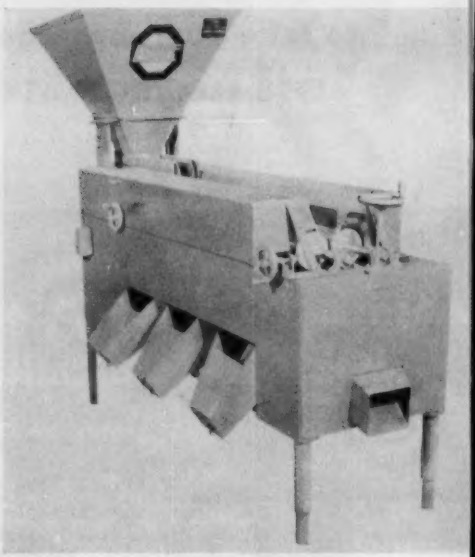
Typical Applications: Removing buffing compound before finishing; can be used as a burnishing compound for zinc die castings.

For more data circle **24** on Reader Service Card

★ ★ ★

Barrel Finishing Parts-Media Separator

Manufacturer: Esbec Barrel Finishing Corp., 192 Beech St., Byram, Conn.



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Any product with UNICHROME COATING 6400 *invites* a second look. Not only does this finish show an interesting texture similar to costly grained leather, but it also has the ability to *keep* this eye appeal long after lesser finishes have deteriorated.

COATING 6400, which is available in a wide variety of colors, has the high chemical resistance of a vinyl coating to acids, alkalies, moisture and other causes of finish failure. It is a hard, yet flexible and chip-proof coating . . . surpassing the textured baked-enamel type of coating in wear resistance by as much as 10 to 1. Applied by spraying, it builds a film 8 to 40 mils thick, depending on number of coats.

COATING 6400 *looks* quality . . . proves it by standing up in hard service . . . precisely the requirements for such quality products as business machines, office furniture and others. Send for detailed information.

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Equipment: The Esbec Dimensional Separator.

Operation: Separations are made by the machine's ability to sense a difference in critical dimensions. Thinner, flatter pieces drop through the adjustable gap between the rolls, while thicker, chunkier pieces are carried off the end of the rolls. Three separate discharge chutes are beneath the rolls and one is at the end. Machine is said to be accurate to within 0.0025 inch, allowing it to make separations of parts and media where the difference in dimensions is small.

Typical Applications: Machine is especially suitable for making difficult separations. Will separate needle-like parts of different diameters; flat parts or flat chips from round or block shapes; dissimilar parts which have been mixed by accident; dissimilar parts that have been processed together for economy in production; burnishing balls and other metallic media; different sizes of screws that have been mixed together in barrel plating.

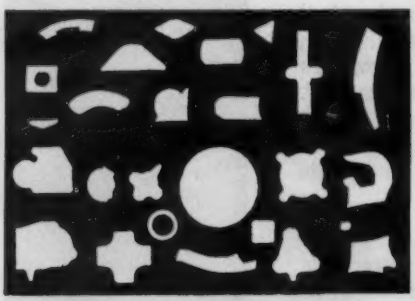
For more data circle 25 on Reader Service Card

★ ★ ★

Vibratory Burnishing Machine

Description: A machine called the "Lorco Vibrator" is said to speed descaling, deburring, grinding, finishing, coloring and burnishing of metal and plastic parts. It performs these operations by shaking the work container so that the parts and media are in constant motion, rubbing against one another.

The machine consists of a compartment for the parts and media, which is shaken by a vibratory mechanism. The vibrator can be supplied for either



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Here's why YOU *should use* SPEE-FLO HOT SPRAY SYSTEMS

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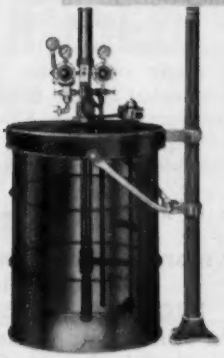

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- **DIVORCED ACTION . . .** air motor sealed off from pump.
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- **AIR MOTOR MIXER**
- **UP TO 3 GPM.**
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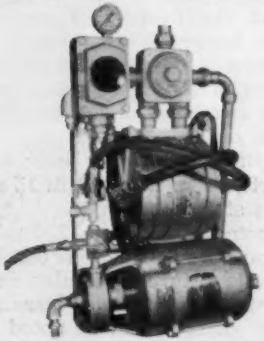
- **FAST CLEANOUT**



SPEE-FLO HOT SPRAY HEATERS

- **SIMPLE . . .** turn them on, ready in 5 minutes. Turn them off . . . exclusive construction eliminates daily cleanout.
- **EFFICIENT . . .** full heating range, 90-180°F. Easy, accurate control . . . coil-less design prevents clogging.
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101

fixed or variable amplitudes and frequencies. Models currently available have from 10 to 30 h.p. and capacities of 6.92 to 17.50 cubic feet.

In the vibrating compartment, the manufacturer states, the entire load is in continuous motion rather than having motion of parts and media in only a part of the load. This continual movement hastens stock removal and reduces time to do a job. In addition, it is stated, a scrubbing action is set up by the frequency and amplitude at which the machine vibrates.

Applications: A husky burr on a brass part can be removed in 15 minutes, it is stated.

Stock removal of up to 200 microinches has been achieved on hard stainless steel turbine blades in 30 minutes when such blades were suitably fixtured. It should be noted that while small parts can be vibrated "free," heavy parts must be racked or fixtured. When parts are fixtured in the vibrator, the time cycle is reduced. It can be reduced still more by securing the fixture to the rim of the vibrating bowl.

A heavy flash on a die-cast part has been removed in 23 minutes.

A delicate automobile transmission part has been successfully processed in the vibrator.

To a certain extent, the vibrator will also work in recessed and shielded areas, which are difficult to reach.

The machine can be used to perform many operations, from coarse stock removal to fine finishing.

Manufacturer: Lord Chemical Corp., 2068 S. Queen St., York, Pa.

For more data circle **26** on Reader Service Card

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

For more data on any product mentioned in PRODUCTS FINISHING circle numbers on postpaid card inside front cover.

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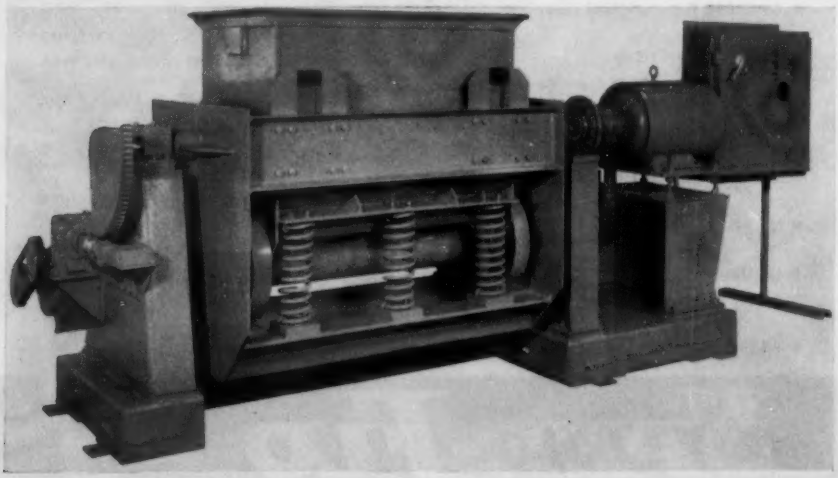

A 30-h.p. Lorco Vibrator: finish refinement, deburring and stock removal by vibration

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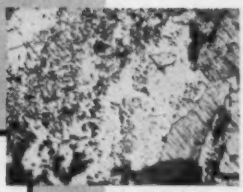
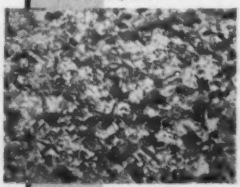
STANDARD SHAPES



ROLLED FLAT PLATE ANODE SECTION:
This Photomicrograph shows highly irregular, uncontrolled grain size—a major cause of shedding and resultant rough electrodeposits.



APW EXTRUDED ANODE SECTION:
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CONTROLLED GRAIN SIZE: APW EXTRUSION PROCESS* controls grain size within definite limits — minimizes sheddings

These scientifically shaped anodes retain 80% of original active surface area after 85% by weight has been plated off!

Costs are lowered by prolonged anode life, minimized polarization and less silver scrap to be refined.

In addition, the APW Extrusion Process controls grain size within definite ideal limits so that corrosion is smooth and uniform. Electrodeposits are *consistently* smooth. Shedding is virtually eliminated. Rejects are a comparative rarity!

We are anxious that the silver you buy in anodes is used most efficiently and economically. Special anode shapes will be engineered to meet your particular plating bath conditions. Call or write for a representative. We'll be glad to assist with your plating problems.

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Page 132

News of the Industry

New plants . . . company news . . .
new positions . . . meetings . . . necrology . . .

NEW PLANTS

C. Robert Fay, vice president of **Pittsburgh Plate Glass Company's** Paint and Brush Division, has announced that the company has completed construction of facilities for Selectron polyester resins in southern California. The new building ajoins the company's modern paint-producing plant at Torrance, California.

★ ★ ★

The Dow Chemical Company has opened a new sales office in Dallas, Texas, in the Dallas Federal Building, 1505 Elm Street. **Donald P. Camp,** former head of chemical sales with the company's Houston office, has been appointed manager.

★ ★ ★

The Vacuum Equipment Division of **F. J. Stokes Corporation,** Philadelphia, has opened a new sales office at 77 Bedford Street, Stamford, Conn.

John C. Coleman will be manager of the new office, which will serve New England, as well as the Bronx and all of Long Island.

The Stokes office in Mount Vernon, N. Y., from which Mr. Coleman formerly served this territory, has been closed.

The American Platinum and Silver Division of Engelhard Industries, Inc., has bolstered its New England operations by more than doubling the size of its plant and warehouse there.

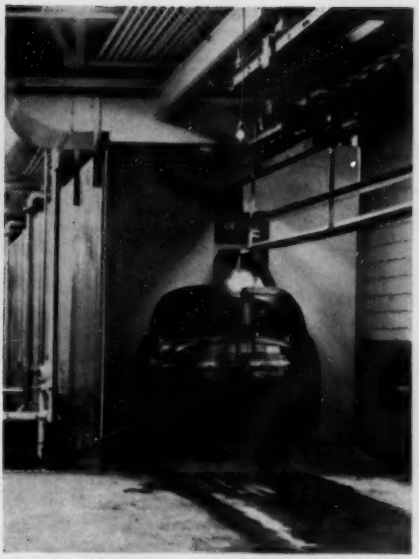
New facilities include a vault three times as large as the former one, enabling the plant to stock more items and ensure faster delivery to customers, according to S. P. Musco, Providence manager for the American Platinum and Silver Division.

The American Platinum and Silver Division — known as The American Platinum Works until its consolidation into Engelhard Industries, Inc., early this year—established its Providence branch in 1955.

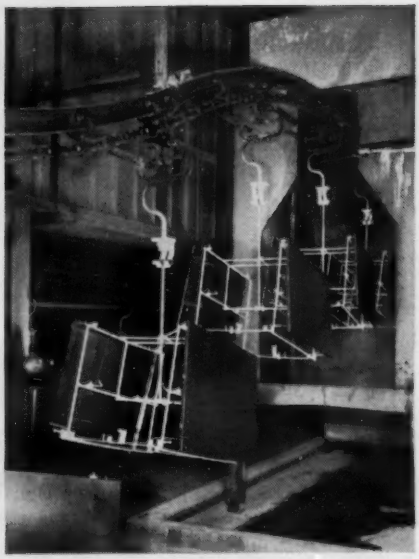
COMPANIES

A new communications channel linking **The Dow Chemical Company's** overseas sales offices and subsidiaries in Europe with the company's headquarters and plant locations in the United States has been opened.

Replacing the previously used teletypewriter system, a new radio circuit between New York and Zurich, Switzerland, has been leased by the company from RCA Communications, Inc., and Radio-Suisse. It will assure faster and more efficient service for customers overseas as well as saving operational costs, the company said.



BODY LINES save up to 10 to 12¢ per body



APPLIANCE LINES save up to 4 to 5¢ per cabinet

New Parker COLD BONDERITE SYSTEM slashes steam costs!

Want to save up to 70% of heating costs on your phosphate coating line? Put in the amazing Cold Bonderite System, newly developed for low temperature operation.

It includes a new cold alkaline cleaner, specially developed to remove grease and soil through an effective temperature range of 60° to 120°. A new Spra Bonderite works in conjunction with the cold cleaner, producing excellent coatings at low temperatures. B.T.U. requirements are drastically reduced, with no sacrifice in quality.

Chemical costs of the new Cold Bonderite System just about match conventional cleaner and phosphating materials. Operation and control are simple as can be.

New Cold Bonderite System is at work right now—has been for months—in several famous production plants. It's a *proven* money-saver!

Find out how much Cold Bonderite System will cut *your* phosphate line heat costs. Write or call for complete information.

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BONDERITE	BONDERITE and BONDERLUBE	PARCO COMPOUND	PARCO LUBRITE	TROPICAL
corrosion resistant paint base	aids in cold forming of metals	rust resistant	wear resistant for friction surfaces	heavy duty maintenance paints since 1933

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Minnesota Mining and Manufacturing Company, of St. Paul, Minnesota, recently introduced the Vibraslide barrel finishing machine by demonstrating the new unit at the plant of **Metal Finish Inc.,** Newark, N. J., one of the Honite distributors who will handle sales of the barrel.

The Vibraslide machine is said to reduce time consumed during cut-down operations as well as to make it possible to barrel finish inside diameters of various parts.

Uniformity of vibration was demonstrated by placing glass stemware in the barrel, without rotation. As the media vibrated, the glass was drawn beneath the media, out of sight. Approximately one minute later, the glass appeared at the top of the vibrating media, undamaged.

On hand for the demonstration were Paul E. Kirchartz, president of Metal Finish, Inc., who was a consultant in development of the machine; B. W. Elliott, president of Elliott Manufacturing Company, Binghamton, N. Y., manufacturer of the

These two Vibraslide machines (right foreground) at the plant of Metal Finish, Inc., Newark, N. J., were used to see Vibraslide process in action. Recent Vibraslide demonstration was held by machine's exclusive distributor, Minnesota Mining and Manufacturing Co., to introduce the new machine.

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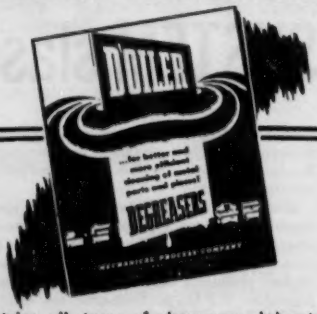

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...use RED LABEL DARCO®

It's easy to cut the waste of costly anode metal due to plating rejects . . . by using Red Label DARCO activated carbon to keep your plating bath clean.

You'll get better plating quality . . . lower plating costs. DARCO wets quickly . . . keeps your shop clean. Its high density reduces time and labor for dumping filters by up to 50%. Red Label DARCO is the standard of the industry—the carbon chosen by custom electroplaters and plating departments everywhere. It's the only carbon made exclusively for the plating industry.

Your nearby DARCO distributor can show you how to use DARCO most effectively. Order from him today.

DARCO IS MADE BY ATLAS CHEMICALS DIVISION ATLAS POWDER COMPANY WILMINGTON 99, DELAWARE

In Canada: Atlas Powder Company, Canada, Ltd. Brantford, Ontario, Canada

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machine; and E. W. Twining, vice president of Elliott Manufacturing Co. Minnesota Mining and Manufacturing Company, exclusive distributor for the machine, was represented by W. H. Armstrong, sales supervisor, "Honite" brand barrel finishing products; A. D. MacNutt, assistant general manager, Roofing Granules Div.; G. H. Fortune and W. P. Nunn, field engineers; R. E. McCumber, product news manager, and G. D. Farkell, product publicist.

★ ★ ★

A new Mexican subsidiary, **Enthone de Mexico S.A.**, has been formed by **American Smelting and Refining Company** to produce and sell the Enthone line of metal finishing products in Mexico. The new enterprise has been set up, according to Asarco officers, in recognition of the continuing growth of the metal finishing industries in Mexico and the developing need of these industries for a domestic source of supply of metal-finishing chemicals. The new company will be headquartered in Mexico City.

Camilo Torres McDonald, founder and president of the S.M.G., the Mexican counterpart of the American Electroplaters Society, has been named general manager of the new Asarco subsidiary.

Enthone products are produced in the United States by Asarco's subsidiary, Enthone Incorporated, of New Haven, Connecticut. The Mexican company is cited by Asarco officers as a further expansion of Enthone's international production and distribution facilities.

★ ★ ★

Alert Supply Company, Los Angeles manufacturer of buffing compounds, has been acquired by **Hanson-Van Winkle-Munning Company**, Matawan, N. J., manufacturer of plating equipment and supplies.

Alert Supply will retain its corporate identity. Hanson-Van Winkle-Munning west coast sales and technical staffs will join the Pacific coast firm, under the direction of Alfred E. Perkins, president of Alert. Management of Alert will continue un-

SPRAY MASKS
REDUCE YOUR MASKING COSTS BY USING INEXPENSIVE, HEAT RESISTANT
KWIKY-DOTS
A raised edge is automatically provided on each disc for easy grasping. Connected strings of several discs may be removed for fast application. Stock Sizes—⅛" up.
DIE-CUT MASKS, CAPS & PLUGS MADE TO SPECIFICATIONS
Special width of masking tape precision cut to any size from 1/32" up to 9" in standard 60 yard rolls.
BY-BUK COMPANY
4314 W. Pico Blvd., Los Angeles 19, Cal.

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WHY

DO YOU ALLOW RAPID WEAR ON YOUR BUFFING FIXTURES

when they can be *FUSECOATED* to last up to a year or more? We specialize in protective coatings for fixtures of all kinds and would like to add your name to our long list of regular customers.

Write

for our general information folder or send sample fixture or drawing of same to be FUSECOATED.

Fusion Metal Coating Co.
25493 West 8 Mile Road
Detroit 19, Mich.

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CLEANING VERSATILITY by Cincinnati

Combines

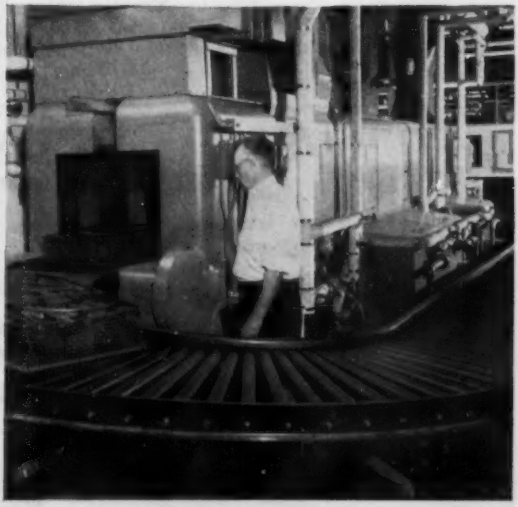
Belt Conveyor and Monorail Conveyor

- Washes
- Rinses
- Rust Proofs
- Dries

Processes

- Steel
- Cast Iron
- Brass
- Aluminum
- Stainless
- Stampings
- Castings
- Screw Machine Parts
- Die Castings
- Machined Parts
- Forged Parts

In many cases, Cincinnati engineers are called upon to design equipment to clean one particular part. In others, they have to come up with a machine that will clean anything in the plant . . . present and future! Installed in the New York State division plant of a noted American manufacturer, the machine illustrated is such a "jack of all trades". It handles all pre-finishing, pre-inspection and pre-assembly cleaning for the complete plant. It's another example of Cincinnati's ability to engineer equipment to a problem and to a budget, too.



What's your problem? Ask for a no-cost, no-obligation survey of cleaning requirements by: **Cincinnati Cleaning & Finishing Machinery Co., 2008 Hageman St., Cincinnati 41, Ohio**

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Alert Supply Company, Los Angeles, Calif.: bought by Hanson-Van Winkle-Munning Company

changed, as will volume product lines of both firms.

The H-VW-M western office has been moved to the Alert Building at 2041 S. Davie Ave., Los Angeles. Alert's San Francisco office will remain at 923 Harrison St.

★ ★ ★

Valentine B. Chamberlain, Jr., has been elected treasurer of the **Vinyl Dispersion Division of the Society of Plastics Industries** at its annual meeting, January 9, in New York City. Mr. Chamberlain is sales manager of **The Stanley Chemical Company** of East Berlin, Conn., a subsidiary of The Stanley Works.

★ ★ ★

Casalbi Company, Jackson, Michigan, has announced the appointment of **Clemtex, Inc.,** Houston, Texas, to handle the sale of Globe Barrel Finishing Equipment and supplies. Clemtex will cover the states of Texas, Oklahoma, Arkansas, western Tennessee, Louisiana and Mississippi.

carl mayer
DRYING OVENS

- Guaranteed Uniform Temperature.
- Gas Fired, Recirculating Air Heaters.
- All Sizes, All Types.
- Long, Trouble-free Service

THE CARL MAYER CORP.
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LOWEST PRICED ITEM!

"At $150 your course is probably one of the lowest priced items that we have connected with our plating operations but I find it the most essential," writes shop owner Milan Kovick. You too, will find it essential to continuous profits in your plating operations! Inquire today. **Dr. Joseph B. Kushner, Electroplating School, 115 Broad Street, Stroudsburg 15F, Pa.**

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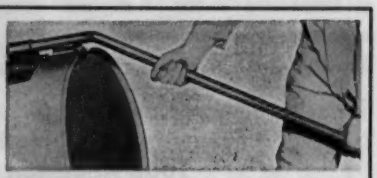
MORSE DRUM UPENDER No. 32

Takes the strain and effort out of upending heavy drums. Has 40" handle offset 35° for top efficiency. Hefty 1¼" hook provides clearance for largest chime. 2½" x 8" toe plate spreads lifting pressure over large area to prevent drum damage. Order Several Today!

MORSE MFG. CO., INC. **$6.90** FOB
762 West Manlius St., E. Syracuse, N.Y.



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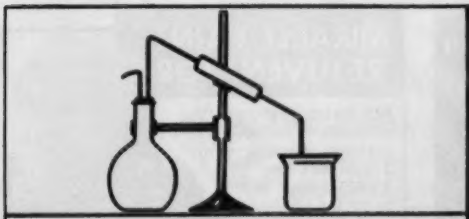
ED. WHITE, KLEM TECHNICAL DIRECTOR, DISCUSSES ANOTHER KLEM PRODUCT

"This month I want to introduce our new steam jenny cleaner and phosphatizer— MINIT-KOTE SJ"

This product eliminates steam gun maintenance — eliminates clogged nozzles — eliminates pre-mixing. Klem Minit-Kote "SJ" is a one-step operation with low equipment cost and low manpower requirements. No weighing or premixing are required — just measure and dilute.

We would like to have you try Minit-Kote "SJ" and to give you the opportunity, will ship trial quantities to you at drum discounts.



WRITE FOR OUR TECHNICAL BULLETIN

KLEM
CHEMICALS, INC.

14401 Lonson Avenue
Dearborn, Michigan

For more data circle 403 on Postpaid Card

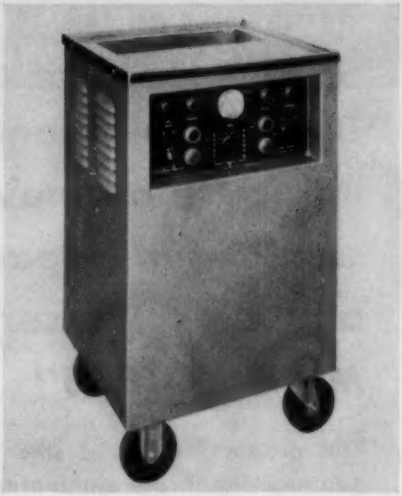
Enthone, Inc., New Haven, Connecticut, a subsidiary of American Smelting and Refining Company, has announced the appointment of **Nicromatic Ltd.**, 20 Drummond Street, Toronto, to manufacture, distribute and service Enthone products for the metal finishing industry. The agreement covers eastern Canada.

★ ★ ★

At the **A.S.T.E. Tool Show**, to be held in Philadelphia from May 1 to 8, **Branson Ultrasonic Corporation**, Stamford, Conn., will display many models of ultrasonic cleaning equipment, from small, table-top models, to the 2.5-k.w. (rated r-f output) generator. The company's latest innovation, the self-contained movable model R-50 cleaner, which includes built-in heating, filtering, and recirculation systems, will also be shown.

In addition to cleaning equipment, the company will also feature the Vidigage, an ultrasonic resonance instrument capable of gaging the thickness of metals and plastics to accuracies of 0.1 to 1.0 per cent.

Norman G. Branson, president; **Peter K. Bloch**, vice president; **George Doerffel**, Philadelphia sales representative and other Branson personnel will be in attendance at booth 745.



To be shown at ASTE Tool Show, this model R-50 cleaner is among the ultrasonic cleaning equipment developed by Branson Ultrasonic Corporation. The cleaner includes ultrasonic generating units, a heater, temperature control, filtration and recirculation systems.

"GRIPALLOY"

. . . Attractive satin sheen ETCHING PRIMER in black and colors . . . Often used as finish coat . . . Air dries in minutes . . .
. . . Amazing tight adhesion to 25 different metals as reported by a large electrical manufacturer.
. . . Excellent resistance to Salt Spray, Gasoline, and Solvents . . .

TENAX, Newark, N. J.
Lacquers—Enamels
Synthetics—Vinyls

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Write for new 1958 Catalog of Paint Testing Instruments and Equipment.

GARDNER LABORATORY, INC.
P. O. BOX 5728-P
BETHESDA 14, MARYLAND

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MIRACLE PAINT REJUVENATOR

All paint restored to original consistancy without opening can. 2 minutes per gal. AVAILABLE ¼ PT. to 55 GALS.

MIRACLE PAINT REJUVENATOR COMPANY
127 E. 9th St., St. Paul 1, Minn.

55-GAL. MODEL

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INVESTIGATE THIS TIME-SAVING

VARIABLE SPEED MODEL

BENCH MODEL VARIABLE SPEED

Bench-Type Single Speed

No. 5—Single Speed

No. 5A—Single Speed

No. 6—Single Speed

Note Carefully These IMPORTANT POINTS

Barrels can be filled with parts or abrasive—*while running.*

Work can be watched — samples removed for inspection — *while running.*

Angle can be changed for best abrasive or polishing action — *while running.*

Barrels can be emptied by tilting to pouring position — *while running.*

Barrels are made in various sizes, shapes, and materials. They are easily replaced.

No. 5—Variable Speed

No. 5A—Variable Speed

No. 6—Variable Speed

If You're a Tumbler, Send for This NEW CATALOG

THE HENDERSON BROS. COMPANY

"The Tumbling Barrel People"

138 SOUTH LEONARD STREET
WATERBURY, CONNECTICUT

SINCE 1880 — DESIGNERS AND BUILDERS OF TUMBLING BARREL EQUIPMENT

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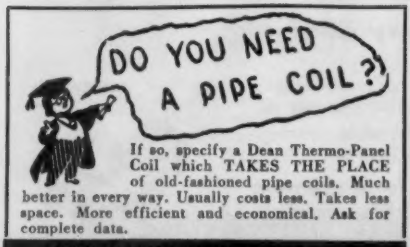
Adolph Plating, Inc., Chicago, Ill., recently cooperated with the exchange cooperative program sponsored by the International Cooperation Administration. Five industrial engineers, representing as many Japanese prefectural (state) governments, have completed three weeks of close observation and study of process control, manufacturing methods, cost determination and control, production control, process improvement, incentive programs, time study, and shop organization and operation at Adolph Plating. Shown (left to right) are: S. Shimamune, of Yokohama; S. Moriyama, of Nagano; H. Watanabe, of Niigata; Richard Giesel, Adolph Plating; T. Matsuzawa, of Nagoya; and T. Morita, of Shiga. (PRODUCTS FINISHING Staff Photograph)



If so, specify a Dean Thermo-Panel Coil which TAKES THE PLACE of old-fashioned pipe coils. Much better in every way. Usually costs less. Takes less space. More efficient and economical. Ask for complete data.

DEAN THERMO-PANEL COIL DIVISION
DEAN PRODUCTS, INC. 622 Franklin Ave
BROOKLYN 38, N. Y. Tel STerling 9-5400

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NEW POSITIONS

Heatbath Corporation has announced the appointment of **Robert G. Wild,** Cleveland Heights, Ohio, as representative for the northern Ohio and western Pennsylvania area.

Mr. Wild was formerly with the R. O. Hull Company and R. W. Renton Company, both of Cleveland.

Gerald Ott, former Heatbath representative in this area has resigned to return to private business.

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Telephone collect for free brochure on

STRIPPING COPPER

with

McKeon's "Liquid Sulphur"

Economical, fast, non-electrolytic.

Sulphur Products Co., Inc.

McKeon Bldg., 621 W. Pittsburgh St., Greensburg, Pa.

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COATINGS
for Zinc and Cadmium

KER-CHRO-MITE® #4
Gives a mirror-like finish to dull-plated work; protects against corrosion, is stain resistant and outperforms other coatings.

KER-CHRO-MITE AL
Produces a yellow chromate conversion coating on pure aluminum or on high silica alloys. Excellent as a base for paint or as a final high resistance finish.

ZIN-K-LUX© (Zinc Brightener)
Produces a lustrous finish (barrel or still) and has excellent throwing power.

CADLUX (Cadmium Brightener)
Brightens (barrel or still), increases plating range and eliminates burning.

® Registered Trade Mark.

KOSMOS
ELECTRO-FINISHING RESEARCH, INC.

140 LIBERTY ST. Ph.: HUbbard 7-8889 HACKENSACK, N. J.

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QUALITY EQUIPMENT
PRICED RIGHT AND READY FOR IMMEDIATE SHIPMENT

BUFFING AND POLISHING EQUIPMENT

100 Hammond—Divine—U. S. Electric—Holland — Standard Electric — L'Hommedieu single speed and variable speed buffing and polishing machines. 1 to 20 HP.

6 Rotary Machines: Hammond—Acme—Packermatic.

Complete buffing systems for above machines, including hoods, cyclones, dust boxes, pipes, motors and blowers; various sizes.

Semi-automatic machines: Buffalo—Hammond Acme—Divine—Production.

ALL EQUIPMENT IN STOCK
INSPECTION INVITED

all quoted subject to prior sale.

J. HOLLAND & SONS, INC.

485 KEAP ST., B'KLYN, N. Y., STagg 2-2022

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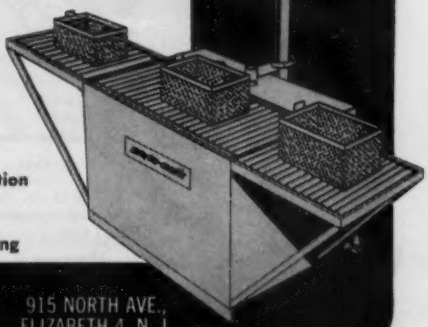
New LOW COST
AGITATING WASHING MACHINE
. . . BY **METALWASH**

- Air Operated — Variable Stroke
- Loads Up to 750 lbs.
- 4 Standard Sizes
- Quickly Installed — Anywhere
- Can Be Grouped for Multi-Stage Operation
- Steam, Gas, or Electric Heat

Ideal for Departmental and In-Line Cleaning



Metalwash® 915 NORTH AVE., ELIZABETH 4, N. J.

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William G. Fallon has been made a vice president, director and executive board member of **Norton Company** at the firm's 73rd annual meeting January 21. He was reappointed general manager of the company's Refractories Division.

George N. Jeppson was re-elected chairman of the board and **Milton P. Higgins** was re-elected president.

Howard G. Seaman of Troy, N. Y., was named to the board of directors of the **Behr-Manning Company,** a Norton Division. Mr. Seaman is president of Norton Pike Company of Littleton, N. H., and manager of Tape Product Sales at Behr-Manning.

★ ★ ★

Richard E. Martin has recently joined the staff of the **Jackson Plating Company,** Jackson, Mississippi, in the capacity of chemist. He will be in charge of quality control and the development of new processes.

Joseph Muscarella

R. E. Martin

Joseph Muscarella has been appointed sales representative for **Hanson-Van Winkle-Munning Co.** in the Kentucky-Tennessee area, the company has announced. His headquarters will be at 366 Francis Building, Louisville, Kentucky.

Prior to his appointment, Mr. Mus-

MAN IN A PICKLE
(A TRUE STORY)
Dick, we just shut down the zinc plating line again. Same old story... parts are dragging soil over and contaminating the pickle tank.
That's the last straw, Mike. This time we've got to get results. I'm calling Steve Choren of Pennsalt, right now!
...I recommend Pennsalt Cleaner K-8. K-8 blasts off smut. It also neutralizes acid soils, and works well in hard water. You see K-8 contains no water. It gives you more cleaner, at lower cost.
Sounds good, Steve. Let's see what Pennsalt K-8 can do to cure the prize production headache in this shop.
THE FOLLOWING WEEK
I see your zinc plating line's going full blast.
Steve, you've got a first-class electrocleaner in Pennsalt K-8. K-8 carries as much current at 8 oz. as our old cleaner did at 10 oz. And on top of that, we're adding less K-8 to maintain concentration.

carella spent four and a half years as sales engineer, general equipment, in the company's main office at Matawan, New Jersey.

★ ★ ★

Klem Chemicals, Inc., Dearborn, Michigan, has announced the appointment of **T. C. Bierdeman** as district manager of the Wisconsin and Illinois territory.

★ ★ ★

Ralph C. Fuller has joined the **O'Brien Corporation** as industrial paint sales representative in northwestern Ohio and northeastern Indiana territories.

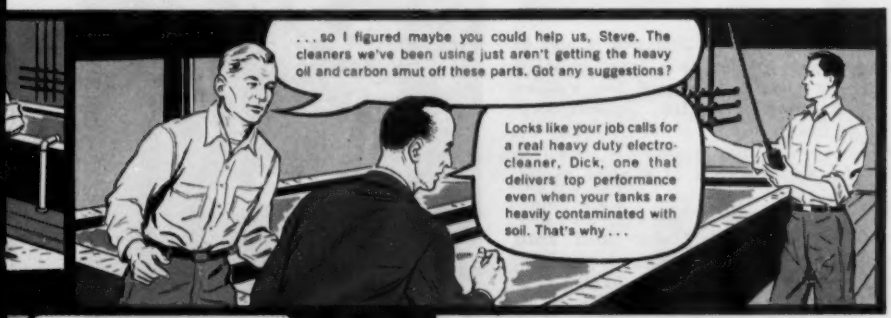
He was previously with the Studebaker-Packard Corporation, where he has had many years of experience in industrial finishing and manufacturing processes.

Ralph C. Fuller

Charles C. Whitt

Bill Young & Company, Incorporated, has announced the appointment of **Charles C. Whitt** as salesman to serve the Kentucky-Tennessee area.

Mr. Whitt had been the chemist and foreman in charge of finishing for the past two years for Universal Button Co., Lawrenceburg, Kentucky.


. . . so I figured maybe you could help us, Steve. The cleaners we've been using just aren't getting the heavy oil and carbon smut off these parts. Got any suggestions?
Looks like your job calls for a real heavy duty electro-cleaner, Dick, one that delivers top performance even when your tanks are heavily contaminated with soil. That's why . . .
Yes, I talked to the boys as I came through the shop. Sounds to me as though K-8 surpassed even my expectations.
Ours too, Steve. K-8 is doing a whale of a job. I can honestly say that we wouldn't change materials now even if we were offered another cleaner at lower cost.

Makes good sense to improve metalworking with chemical know-how . . . gained from wide experience in the field. Call in your Pennsalt salesman. He can help you to "A BETTER START FOR YOUR FINISH."

METAL PROCESSING
DEPARTMENT 573
PENNSALT CHEMICALS CORP.
3 Penn Center, Philadelphia 2, Pa.

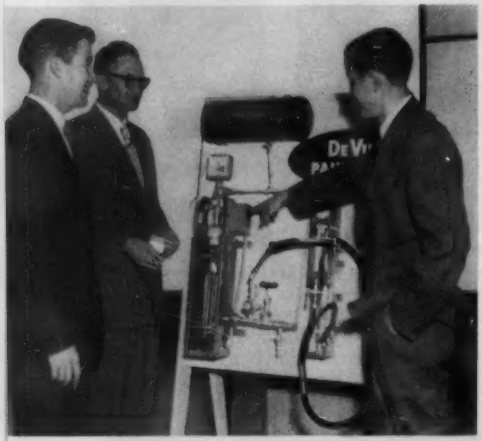
Pennsalt Chemicals
ESTABLISHED 1850

A better start for your finish

For more data circle 414 on Postpaid Card

TRAINING COURSES

Students who traveled thousands of miles specifically to attend the **DeVilbiss Company's** spray painting school were among the more than 1,500 who were instructed in classes held at the company's Toledo, Ohio, facilities during 1957.



Getting the inside story firsthand is part of the training at the DeVilbiss spray finishing school. Here David Halse and Dan Valjoen of British Agencies Pty. Ltd., Johannesburg, listen as George Haigh, of the DeVilbiss export sales staff, uses a cutaway model to show the working parts of a paint heater.

Students traveling the greatest distance were **David Halse** and **Dan Valjoen,** of British Agencies Pty. Ltd., Johannesburg, whose prime reason for making the trip to the U. S. from their South African homeland was to attend the DeVilbiss school. Other students came from Germany, Canada and Puerto Rico as well as all parts of this country.

In more than 50 courses held at the plant and in the field, industrial finishers, decorating and maintenance painters, automobile refinishers, paint and equipment salesmen, even vocational teachers, have learned the latest techniques of spray painting and finishing and learned how to use and service spray equipment.

There have been post-graduate courses for the working spray man and courses in fundamentals for apprentices. Most of the schools have been full, five-day sessions which include paperwork, visual aids, demonstration and practice. These have been accredited by more than 40 colleges and universities. Others have been shorter, concentrated courses. All have been conducted, either at the plant or in the field, by factory instructors. There is no tuition for any course held at the factory. The cost to the student is his board, room and transportation during the period he is in attendance. There is a nominal charge for field schools.

An even more ambitious program for 1958, the 35th year in which DeVilbiss has conducted training schools, is planned. There will be an expanded schedule of field schools and a full schedule at Toledo.

HONORS

A. M. Waller (left), for the past 10 years manager of Diamond Alkali Company's Chromium Chemicals Plant at Kearny, New Jersey, has just completed four decades of service with Diamond. A specially engraved gold watch was given to him by the company to commemorate the occasion. He is shown receiving the memento and congratulations from A. H. Ingley, executive vice president.

Fig. 1—A number of industry and society groups held meetings concurrent with the 46th Annual Educational Session of the Chicago Branch, A.E.S., on January 25. Representatives of Midwestern branches met to discuss formation of a regional organization. Shown (left to right around the table) are: Robert Teply, Warren Johnson, Twin Cities Branch; Paul Glab, Dr. Russell E. Harr, Chicago Branch; Bernhard J. Nordblom, George Parisho, Lloyd O. Gilbert, H. C. Simon, Mississippi Valley Branch; Ralph Brouwer, Eugene Roth, Ralph D. Wysong, St. Joseph Valley Branch; Clyde Kelly, Chicago Branch; Ray J. Dearth, St. Joseph Valley Branch; L. E. Dively, Milwaukee Branch. In second row, (left to right) are Louis Ragué, St. Joseph Valley Branch; John P. Nichols, A.E.S. Executive Secretary, Dr. Harold J. Wiesner, St. Joseph Valley Branch; Frank Marshall, Milwaukee Branch; William Geissman, Rockford Branch. Mr. Dively was elected president pro-tem and Mr. Glab was elected secretary of regional organization.

Fig. 2—The National Association of Metal Finishers held a management seminar on "What Constitutes a Profit." It was conducted by Jerome Kiesling, Associated Business Consultants, Chicago. Afterwards, A. T. Leonard, president of Superior Plating, Inc., Minneapolis, organized a membership drive to enlist more job platers in the association. Shown, (left to right) are the drive divisional chairmen; J. P. Koley, Koley Plating Co.; George W. Taylor, Production Plating Co.; E. U. Marlette, Marlette Plating Co., Inc.; Steve Palasin, Empire Plating Co.; W. B. Knight, Knight Plating Co.; H. J. Siegel, Siegel-Robert Plating Co.; Harold W. Baker, Electro Galvanizing Co.; Mariano Ranno, Imperial Plating Co.; A. T. Leonard, the chairman of the membership drive for the N.A.M.F.

Fig. 3—The Udylite Corporation entertained job platers with a cocktail party and luncheon. Some of the job platers who attended the cocktail party are shown above.

★ ★ ★

Fig. 4—L. V. Nagle (left), Udylite executive vice president, and Dr. R. B. Saltonstall, technical director, were on hand to greet guests at the Udylite cocktail party.

★ ★ ★

Fig. 5 — Udylite luncheon for job platers. Following luncheon, Larry George introduced Udylite organization. Brief talks were given by Clyde H. Reeme, president and L. V. Nagle, executive vice president of Udylite.

Fig. 6 (left)—Feature of the after-luncheon activities was the introduction of "Udysil," the new Udylite silicon rectifier. Presentation included announcement, color illustrations of various elements, and display shown here.

★ ★ ★

Fig. 7 (below)—Speakers and officials for the Chicago Branch Educational Session are (left to right) Dr. Neal Berst, Diversey Corporation; Dr. Harry E. Evangelides, Frankford Arsenal; R. Scott Modjeska, Program Chairman; Charles McCann, Social Research, Inc., Dr. R. E. Harr, president of Chicago Branch.

Fig. 8 (below)—A.E.S. officials attended an M.F.S.A. trustees' meeting. Shown (left to right) are Ralph D. Wysong, A.E.S. second vice president and Herberth E. Head, A.E.S. first vice president. Officers of M.F.S.A. are (continuing) Robert M. Norton, trustee; C. C. Helmle, trustee; E. W. Couch, first vice president; A. P. Munning, executive secretary; Dr. M. M. Beckwith, president; Fred P. Green, third vice president; T. A. Trumbour, treasurer; R. F. Ledford, second vice president; T. R. Gill, trustee; D. F. Mosher, Detroit Convention representative; L. J. Minbiole, trustee. (Figs. 4 and 6 courtesy The Udylite Corp., Detroit, Mich. Other photographs were taken by PRODUCTS FINISHING staff.)

MEETINGS

The **Annual Banquet and Educational Session of the Milwaukee Branch, American Electroplaters' Society,** will be held Saturday, April 26, at the Hotel Schroeder, Milwaukee, Wisconsin.

The educational session begins at 9:30 A.M. Theme for the meeting is "The Challenge of Outer Space."

Harold Mueller, chief process engineer, A. C. Spark Plug Division of General Motors Corp., Milwaukee Plant, will talk on *The Precision Cleaning and Deburring of Missile Guidance Components.*

Dr. Donald Swalheim, Research Laboratory, Electrochemicals Department, E. I. du Pont de Nemours & Co., Inc. will tell his audience about *Recent Developments in Copper Plating.*

Modern Organic Finishes for High Temperature and Abrasive Protection will be discussed by Milton A. Glaser, vice president and technical director of Midland Industrial Finishes Co.

★ ★ ★

Plans are almost complete for the **45th Annual Convention of the American Electroplaters' Society,** to be held May 18-22 in Cincinnati, Ohio. Platers and their wives will begin arriving on Sunday, May 18. They will attend the annual Get-Together Party on Sunday evening at the Sheraton-Gibson Hotel, headquarters for this year's gathering of finishers from plants all over the United States, Canada, and Australia.

Charles Wise and **Ezra Blount,** chairman and co-chairman for the Cincinnati convention, report that committees in charge of arrangements have worked hard to make this convention interesting and enjoyable.

Officially, the convention will begin on Monday morning, May 19. The theme for this year's convention is "Progress Through Education."

On Monday afternoon, educational Chairman Robert Miller's first speakers will present four of 25 or more

Ezra A. Blount

Charles Wise

papers to be given throughout the convention. Titles of some of the papers to be delivered during the convention are as follows: *Effect of Shot-Peening Prior to Chromium Plating on the Fatigue Strength of High-Strength Steel; Loose Abrasive Finishing; The Influence of Physical Metallurgy and Mechanical Processing of the Basis Metal on Electroplating* (A. E.S. Research Project No. 14); *Metal Wastes — Contribution and Effect — Cincinnati Metropolitan Sewage Disposal Area; The Use of Bioassays in the Safe Disposal of Electroplating Wastes; Ion Exchange and the Pickling of Magnesium Sheet; Industrial Waste Treatment and Water Reclamation—A Case Study; Principles of Electrochemistry; Factors Which Influence the Structure of Electrodeposits; Cleaning, Pickling, and Preparatory Surface Treatment; Typical Plating Solution—Cyanide Zinc; Plating Room Power; Design and Engineering Problems in Plating Room Layout and Installation; Plating Rack Design and Insulation; The Role of Accelerated Tests in the Paint-Finishing Field; Vinyl Plastisols and Organisols as Product Finishes; When and How to Select an Organic Coating; Hard Anodizing of Aircraft Fuel-Metering Components; Electrodeposited Metallic and Flame-Sprayed Ceramic Coatings for Elevated Temperatures; The Role of the Basis Metal in the Production of Stressed Electrodeposits; Alloy Plating Systems for Air-*

A. E. S. 45TH ANNUAL CONVENTION,
Sheraton-Gibson Hotel, Cincinnati, Ohio, May 18-22, 1958
"Progress Through Education"

craft Engines; Pitting in Thick Chromium Deposits; Instrumentation; Pattern Plating with Electrodeposits; Panel Discussion of Plating Problems (Problems relating to preparation of base metals, conversion coatings and military requirements, corrosion, decorative plating, anodizing and plating on aluminum, specialty work, job-shop operation, and organic coatings will be discussed by the panel).

Social highlights of the national A.E.S. convention include the Open House sponsored by the Metal Finishing Suppliers' Association on Monday evening; the M.F.S.A. Golf Tournament, and an Outing at Coney Island Amusement Park on Tuesday; a floor show and dance on Wednesday evening; and the Annual Banquet and Dance on Thursday evening.

Plant tours planned for the Cincinnati Convention include a trip through the Cincinnati Milling Machine Co., the world's largest manufacturer of machine tools, and a visit to the Sharonville plant of the Electric Auto-Lite Co., a huge, modern automatic plating plant where automobile bumpers are made.

★ ★ ★

The Masters' Electro-Plating Association of New York has announced that it will hold its **40th Annual Banquet** at the Astor Hotel, New York City, on Saturday, June 14, 1958.

This year A. Galfunt, Hudson Chromium Co., is the banquet chairman. Mariano Ranno of the Imperial Plating Co. is chairman of the association, L. A. Kornblum of Kings Electro Plating Co. is vice chairman and Frank Kaiser of Long Island Mechanical Plating Co. is treasurer.

The cocktail hour will start at 6:30 P.M., followed by the banquet, dance, and entertainment. Subscription to the banquet is $25.00 per person.

MEETINGS of INTEREST to FINISHERS

Mar. 15. Annual Educational Session and Banquet, Rockford Branch, A.E.S., Faust Hotel, Rockford, Ill.

Apr. 12. Annual Meeting, Mississippi Valley Branch A.E.S., Johnny Hartman's Restaurant, Davenport, Iowa.

Apr. 12. Annual Banquet, Baltimore-Washington Branch, A.E.S., Park Plaza Hotel, Baltimore, Md.

Apr. 12. 19th Annual New England Regional Meeting and Banquet, A.E.S., Hotel Statler, Hartford, Conn.

Apr. 14-15. Annual Spring Technical Conference & Exhibition, International Association of Electrotypers & Stereotypers, Inc., Carter Hotel, Cleveland, Ohio.

Apr. 19. 4th Empire State Regional Meeting, Seneca Hotel, Rochester, New York.

Apr. 26. Annual Banquet and Educational Session, Milwaukee Branch, A.E.S., Hotel Schroeder, Milwaukee, Wisconsin.

Apr. 27-May 1. Spring Meeting, The Electrochemical Society, Statler Hotel, New York, N. Y.

May 3. Annual Educational Session and Banquet, Boston Branch, A.E.S., Hotel Statler, Boston, Mass.

May 4. Annual Meeting, Toronto Branch, A.E.S., Sheraton Brock Hotel, Niagara Falls, Ontario.

May 5-7. 13th Purdue Industrial Waste Conference, Purdue Memorial Union Building, Purdue University, West Lafayette, Indiana.

May 19-22, 1958. 45th Annual Convention, A.E.S., Hotel Sheraton-Gibson, Cincinnati, Ohio.

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PRODUCT LITERATURE

45. Barrel Copper Brightener
Complete information on a copper brightener that is said to increase throwing power, speed production, and eliminate cyanide fumes. Jelco Finishing Equipment Corp., 153 E. 26th St., New York 10, New York.

46. Electropolishing Solutions
Data on Electro-Glo electropolishing concentrate, which deburrs, levels, and polishes metals simultaneously. Electro-Glo Co., 1429 S. Talman Ave., Chicago 8, Ill.

47. Non-Destructive Coating Thickness Tester
Brochure gives information on the Dermitron coating thickness tester, which measures plated coatings on steel, copper, brass, zinc die castings, aluminum, bronze and other metals. Unit Process Assemblies, Inc., 61 E. Fourth St., New York 3, N. Y.

48. Drying and Baking Booklet
Data Booklet D117 shows how heating units and ovens of all sizes and shapes can be built at low cost from prefabricated interlocking infrared sections. Dry Clime Lamp Corp., Greensburg, Indiana.

49. Protect Highly Polished Surfaces
Information on Neotex, an open-mesh rubber matting that can be used to line any surface where highly polished goods are worked on or in transit. Research Products Corp., Dept. 76, Madison 10, Wisconsin.

50. Dual-Action Sander
Information on the Easy dual-action portable sanding machine. Detroit Surfacing Machine Co., 1266 E. Eight Mile Rd., Detroit 20, Mich.

51. Heavy-Duty Cleaner
Information on Pennsalt K-8, a heavy-duty electrocleaner that neutralizes acid soils, blasts off smut, works well in hard water and in tanks that are heavily contaminated with soils. Metal Processing Dept. 573, Pennsalt Chemicals Corp., 3 Penn Center, Philadelphia 2, Pa.

52. Zinc Brightener
Technical information on Promat zinc brightener. Promat Div., Poor & Co., 851 S. Market St., Waukegan, Ill.

53. Ball Anode Container
Information on a recently introduced ball anode container that is said to be constructed to give longer service. The Stutz Co., 4410 Carroll Ave., Chicago 24, Illinois.

54. Stripper for Tough Finishes
Brochure describes Epoxystrip, a paint stripper formulated to remove organic finishes that resist stripping. Beck Equipment Co., 3350 W. 137th St., Cleveland 11, Ohio.

55. Degreasers
Information on a complete line of vapor degreasers, ranging from small batch-type units to large, high-capacity degreasers. Armstrong & White, Cheswick, Pennsylvania.

56. Quartz Tube Heating Elements
Bulletin describes quartz "Infratube" heating elements, which are said to be useful in drying, baking, curing, heating and other processing applications. Quartz Products Corporation, P. O. Box 628, Plainfield, N. J.

57. Bronze Powders
Color card shows 33 colors of bronze-like finishes that can be produced from stock Cres-Lite bronze powders. Crescent Bronze Powder Co., 118 W. Illinois St., Chicago 10, Ill.

58. Chemical Treatments for Metals
An eight-page brochure describes various chemical conversion coatings for steel, aluminum, zinc, galvanized iron, zinc and cadmium plated surfaces; for corrosion resistance, paint bonding, drawing and forming, and protection from friction surfaces. Includes list of current government specifications. American Chemical Paint Co., Ambler 14, Pennsylvania.

59. Polishing Felt
A 12-page booklet describes and illustrates some of the many ways that felt can be used to produce a fine surface finish. Includes table to guide the user in determining the best combination of materials for polishing, finishing and buffing operations. Also gives instructions for setting up and caring for felt wheels. Bacon Felt Co., 447 W. Water St., Taunton, Mass.

60. Water Wash Spray Booths
Bulletin DUE tells how water curtains in Dynaprecipitor spray booths remove air-entrained pigments from spray booth exhaust air. Drawings show construction features and ease of maintenance. Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Ill.

61. Wipe Off Dust
Sheet on specifications for tack cloths tells advantages of using these treated cloths to remove dusts, lint and sanding particles from products to be finished. Bond Chemical Products Co., 2639 N. Clybourn Ave., Chicago 14, Ill.

62. Self-Sticking Felt
Data Sheet No. 187 describes adhesive-backed pre-cut felt, which is useful in preventing scratching and marring of highly polished surfaces during handling, shipping or storing. W. H. Brady Co., 746 W. Glendale Ave., Milwaukee 9, Wisconsin.

63. Masking Aids
Brochure entitled "Time-Saving Masking Aids for Better Product Finishing" contains data on a complete line of masking plugs, caps, corks, peelable plastic masking, precision-slit masking tape, tape dispensers, other masking aids for painters and platers. By-Buk Company, 4314 W. Pico Blvd., Los Angeles 19, Calif.

64. Cleaning and Finishing Machinery
A 24-page catalog contains information on principles of metal cleaning; data on conveyor-type cleaning machines, monorail-type cleaning machines, drum-type cleaning machines, turntable-type cleaning machines, phosphatizing machines, spray booths, other finishing equipment. Cincinnati Cleaning & Finishing Machinery Co., 2008 Hageman St., Cincinnati 41, Ohio.

65. Cleaning Compound
Data on Apex RPS cleaning compound, formulated to be used as a heavy-duty soak and electrolytic cleaner for ferrous metals. Apex Alkali Products Co., Main & Rector Sts., Philadelphia 27, Pa.

66. Spray Nozzle Data
Catalog 33, a complete run-down on the company's line of industrial spray nozzles, contains valuable data on technical aspects of nozzle application, effects of pressure on flow rate. Delavan Manufacturing Co., West Des Moines, Iowa.

67. Automated Degreaser
Folder describes and illustrates a degreaser that cleans parts by automatically carrying them through a vapor rinse, a warm-distillate solvent rinse, a final pure vapor rinse, and drying. Detrex Chemical Industries, Inc., Box 501, Dept. A-802, Detroit 32, Mich.

68. Laboratory Equipment Catalog
The 112-page 1958 edition of the Gardner Catalog describes a wide variety of testing and control instruments useful in the finishing industry. Gardner Laboratory, Inc., P. O. Box 5728 PF, Bethesda 14, Maryland.

69. Centrifugal Painting Machines
Folder describes the Dipspin, which is designed to be used in applying lacquers and quick-drying enamels, and the Filwhirl, for use in applying baking and slow-drying enamels. Leon J. Barrett Co., 1449 Grafton Rd., Worcester, Mass.

70. Automatically Applied Liquid Buffing Compound
Bulletin LC-100 describes automatic application of liquid buffing compound, which is said to save buffing time and increase buff life. It explains the installation of the "Liquimatic" system. Economy and efficiency of the metered control are described in detail. Hanson-Van Winkle-Munning Co., Matawan, N. J.

71. Paint-Mixing Machine
Data sheet describes a machine for mixing paint without removing it from the five-gallon container. Miracle Paint Rejuvenator Co., St. Paul 1, Minn.

72. Wood Tank Data Book
"Wood Tank Reference and Data Handbook" includes data on the uses of wood tanks, capacities, physical and chemical properties of wood tanks, polymer-lined wood tanks to withstand severe operating conditions. National Wood Tank Institute, 332 S. Michigan Ave., Chicago 4, Illinois.

73. Controlling Chromate Coatings
Literature tells how to apply chromate conversion coatings on zinc, cadmium, copper, brass and aluminum, how to control the chemicals involved. Kosmos Electro-Finishing Research, Inc., 140 Liberty St., Hackensack, N. J.

74. Bright-Dip Corrective
Technical Data Sheet No. 21B-2 describes aluminum bright dip corrective solution, an addition agent for use in nitric-phosphoric acid baths to restore the lustre-producing properties of such baths. In many cases, use of this solution has eliminated the necessity for periodic dumping of aluminum bright dips, the manufacturer states. MacDermid, Inc., Waterbury 20, Conn.

75. Cleans and Phosphatizes
Folder describes Oakite Cryscoat No. 89, an iron phosphatizing compound that cleans and phosphatizes at the same time. Used in spray washing machines or tanks, this material converts the surface to an iron phosphate that requires less paint than heavier, coarser coatings. Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

76. Baking and Drying
Catalog No. 122 is a guide to ovens designed to be used in baking, drying and curing paint, enamel, lacquer and varnish. Gives complete data on various types—batch, monorail, continuous conveyor. W. S. Rockwell Co., 2908 Eliot St., Fairfield, Conn.

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77. Portable Paint Pump
Literature describes the Alemite Versatal Porta-Pump, which fits directly on five-gallon containers. Will handle lacquers, enamels, primers, sealers, vinyls, epoxies, spray booth coatings, and so on. Alemite Div., Stewart-Warner Corp., Dept. AF-38, 1850 Diversey Parkway, Chicago 14, Illinois.

78. Coated Abrasives
Information on the company's line of coated abrasive products: belts, rolls, sheets, discs, specialties. Abrasive Products, Inc., South Braintree 85, Mass.

79. Wet or Dry Sanding
Literature describes a complete line of air-operated sanding machines, suitable for wet or dry sanding. Sundstrand Magnetic-Pneumatic Products, Div. of Sundstrand Machine Tool Co., 1020 Ninth St., Rockford, Ill.

80. Three-In-One Cleaning Machine
A 28-page brochure includes description of the A-F 3-in-1 washing machine, a cleaning machine that is actually three machines in a single housing, using common tanks, spray systems, headers and drains. It has two overhead conveyors and a wire mesh belt conveyor, so that parts to be cleaned may be separated into three groups. Alvey-Ferguson Co., 616 Disney St., Cincinnati 9, Ohio.

81. Vacuum Plating
Information on depositing metallic coatings by the vacuum plating method. Consolidated Electrodynamics, Rochester Div., Rochester 3, N. Y.

82. Economy Plating Racks
Information on ready-made, mass-produced standard plating racks. Belke Manufacturing Co., 947 Cicero Ave., Chicago 51, Illinois.

83. Copper, Nickel and Zinc Anodes
Information on specification-made plating anodes. New Jersey Metals Co., 724 Rockefeller St., Elizabeth 2, N. J.

84. Fluoborate Chemicals
Information on fluoborate plating chemicals that are shipped in non-returnable containers. The Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio.

85. Plating Waste Recovery
Literature describes systems for recovering valuable materials from plating wastes. These systems will return fresh plating solutions to the plating tanks and at the same time return pure water to rinse tanks. Industrial Filter & Pump Mfg. Co., 5904 Ogden Ave., Chicago 50, Illinois.

86. Bias Buffs
Information on the advantageous features of Schaffner bias buffs. Schaffner Manufacturing Co., Inc., Schaffner Center, Emsworth, Pittsburgh 2, Pa.

87. Hot Spray Heaters
Literature on Spee-Flo hot spray painting equipment. Spee-Flo Co., 6614 Harrisburg, Houston 11, Texas.

88. Industrial Ovens
Bulletin 200 describes complete line of industrial ovens. W. W. Sly Manufacturing Co., 4784 Train Ave., Cleveland 1, Ohio.

89. Steam Cleaner-Phosphatizer
Information on Minit-Kote SJ, a one-step cleaner that is used to steam clean and apply a phosphate coating at the same time. Klem Chemicals, Inc., 14401 Lanson Ave., Dearborn, Mich.

90. Cut Anode Waste
Information on reducing waste of costly anodes by purifying plating baths with activated carbon so as to reduce rejects. Chemicals Div., Atlas Powder Co., Wilmington 99, Del.

91. Tumbling Abrasives
Information on Tumblex barrel finishing abrasives. Norton Co., Worcester 6, Massachusetts.

92. Finishing Flat Parts
Data on how to finish flat parts with Model FF-6 abrasive belt polishing machine. Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Michigan.

93. Copper Plate Through Holes
Data on the recently introduced CuSol Process of copper plating, which is said to have exceptional throwing power, making it useful for plating through holes, such as is necessary in making printed circuits. The Seymour Manufacturing Co., 18 Franklin St., Seymour, Connecticut.

94. Touch-up
Folder tells how to retouch marred places easily with aerosol spray paints. Sprayon Products, Inc., 2077 E. 65th St., Cleveland 3, Ohio.

95. Fume Control
Booklet F shows typical installations of Kirk & Blum fume-control systems in large and small plants. Kirk & Blum Mfg. Co., 3116 Forrer St., Cincinnati 9, Ohio.

96. Fast-Spray Booth Coating
Details on a low-viscosity booth coating that is said to go on more easily and quickly, without cobwebbing. Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, N. J.

97. Finishing Systems
Literature describes complete paint-finishing systems and individual components — washers, ovens, dry-off tunnels, spray booths. Burdett Manufacturing Co., 4916 S. Monitor Ave., Chicago 38, Ill.

98. Metal Preparation Products
Literature describes products for cleaning, rust removal, phosphatizing, conversion coating and cold forming. Neilson Chemical Co., 2302 Gainsboro, Detroit 20, Ferndale, Mich.

99. Vapor-Degreasing Booklet
Tells how vapor degreasing works, types of equipment, cost-saving advantages of this method for cleaning metals. Electrochemicals Dept., Chlorine Chemicals Div., E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Del.

100. Automatic Metal Finishing, Processing
Details about "Little Steve," an automatic dip processing machine that is useful in anodizing, dip painting, flow coating, bright dipping, hot tin dipping, ultrasonic cleaning, electropolishing. Frederic B. Stevens, Inc., 1800 Eighteenth St., Detroit 16, Mich.

101. Electrostatic Spray Painting
No. 2 Process Brochure cites many examples of installations where electrostatic spray painting has been used to advantage. Ransburg Electro-Coating Corp., Indianapolis 7, Indiana.

102. Automatic Constant Voltage
Technical study of Ther Reactron vs. Tap Switch or Motor-Driven Variable Auto-Transformer Installations tells about advantages of using this d.c. power source, which automatically maintains constant voltage to the plating tank. Ther Electric & Machine Works, 13A S. Jefferson St., Chicago 6, Ill.

103. Pearlescent Finishes
Information on Nacromer YNC, a product that can be added to any coating material to produce a pearlescent effect. Mearl Corp., 124 E. 40th St., New York 16, New York.

104. Aluminum-Processing Chemicals
Technical data sheets describe aluminum-processing chemicals: cleaners, desmutting chemicals, etchants. Cowles Chemical Co., 7016 Euclid Ave., Cleveland 3, Ohio.

105. Durable Finish
Information on Kadmoid, a tough, durable finish said to offer peak resistance to salt and other chemicals on products that must resist outdoor exposure. Universal Paint & Varnish, Inc., Box 199, Bedford, Ohio.

106. Spray Booth Water Filters
Information on reducing maintenance costs by installing filtration equipment to remove overspray particles from water wash spray booth water. Industrial Filtration Co., 166 Industrial Ave., Lebanon, Indiana.

107. Continuous Stripping
Literature describes Tank Solvent No. 52, which is said to remove paint from conveyors, chains and hooks while the conveyor is in motion. Pockrandt, Inc., 1108 Marquette St., Bay City, Mich.

108. Tank Lining
Data on Amer-Plate PVC Tank Lining, which is said to withstand hard chrome liquor at temperatures up to 160 deg. F.; resist corrosive salts, strong acids, and oxidizing materials; adhere directly to concrete, without an interlining. Amercoat Corp., Dept. EC, 4809 Firestone Blvd., South Gate, Calif.

109. Blasting Abrasives
Data on Exolon Fastblast abrasives. The Exolon Co., 943 E. Niagara St., Tonawanda, N. Y.

110. Vacuum Metalizing Coils
Literature tells how to get improved results in vacuum metalizing by using Sylvania vacuum metalizing coils. Sylvania Electric Products, Inc., Chemical and Metallurgical Div., Towanda, Pa.

111. Bright Cyanide Copper
Technical bulletin on M & T Bright Cyanide Copper, which is said to offer mirror brightness and excellent plating speed as an undercoat for decorative chromium finishes. Metal & Thermit Corp., Rahway, N. J.

112. Preparing Aluminum for Plating
Data on Alkaline Pre-Plate, a zincate bath used to prepare aluminum for plating. Northwest Chemical Co., 9310 Roselawn, Detroit 4, Mich.

113. Chemical Polishing
Information on chemically polishing metals with Iridite chromates. Allied Research Products, Inc., 4004-06 E. Monument St., Baltimore 5, Maryland.

114. Red Primer
Information on the advantages of using Napry Red Primer. Lowe Brothers Co., Dayton 2, Ohio.

115. High-Temperature Chrome Plating Additive
Information on Dual-Action Zero-Mist H.T.-2, an additive for chromium plating baths. This material suppresses mist and at the same time reduces surface tension and drag-out losses. Udylite Corp., Detroit 11, Mich.

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116. Degreasing Solvent
Information on Blacosolv degreasing solvent. G. S. Blakeslee & Co., 1844 S. Laramie Ave., Chicago 50, Ill.

117. Fixture-Mount Pre-Plate Finishing
Information on the Spin-Finish method of polishing zinc, brass and aluminum die castings. Grav-I-Flo Corporation, Dept. PF-3, 400 Norwood Ave., Sturgis, Michigan.

118. Selection of Offhand Belt Finishing Materials
Chart lists proper abrasives, grit, belt speed, lubricant and contact wheel to use in polishing 16 of the most popular metals and alloys. Eleven types of contact wheels are described. Information includes types of surfaces, hardness and density, wheel action and the advantages of each type of wheel. Dept. OBF, Behr-Manning Co., Troy, N. Y.

119. Wash Primer
Data on Stantite two-component spraying wash primer, which is said to improve corrosion resistance, adhesion, and durability of top coats. Stanley Chemical Co., Subsidiary of The Stanley Works, Dept. C, 1468 Berlin St., East Berlin, Connecticut.

120. Corrosion-Proof Floor Surfacing
Catalog describes Corocrete, a floor-surfacing material that is said to have excellent resistance to corrosives used in plating. Ceilcote Co., Inc., 4848 Ridge Rd., Cleveland 9, Ohio.

121. Masks for Precision Painting
A 20-page book describes and illustrates precision-made masks for paint decorating. Wm. M. Fiore, Inc., 269 - 41st St., Brooklyn 32, N. Y.

122. Plating-Thickness Tester
Description of the Kocour Model 955 electronic plating thickness tester. Kocour Co., 4814 S. St. Louis Ave., Chicago 32, Illinois.

123. Finish, Then Form
Literature tells how phosphate coatings can be used to permit metal to be finished in strip form, then formed into the desired shape without harming the paint film. Parker Rust Proof Co., 2172 E. Milwaukee Ave., Detroit 11, Mich.

124. Industrial Gold Plating
An eight-page technical paper on industrial gold plating. Sel Rex Corporation, Dept. PF, Nutley 10, N. J.

125. Tumbling Barrels
Catalog describes and illustrates a complete line of tumbling barrels. Henderson Bros. Co., 134 S. Leonard St., Waterbury, Connecticut.

126. Rhodium Plating Solutions
Literature describes the company's line of rhodium plating solutions. Sigmund Cohn Mfg. Co., Mount Vernon, N. Y.

127. Corrosion-Resistant Drums
Data on drums coated inside and out with corrosion-preventive Miccrosol coating. Michigan Chrome & Chemical Co., 8615 Grinnel Ave., Detroit 13, Mich.

128. Metal Preparation Machinery
Catalog describes machines for cleaning and pretreatment of metals: washing machines, spray pickling machines, dryers, degreasers, phosphatizing machines, complete finishing systems. Metalwash Machinery Corp., Elizabeth 4, New Jersey.

129. Making the Most of the Spray Painting Method
A reference booklet for spray painters gives basic information on this method of paint application, includes helpful hints to improve quality and economy. The DeVilbiss Company, Toledo 1, Ohio.

130. Clean-Rustproof-Phosphatize
Folder describes Metacote, a material that can be used to clean, rustproof and phosphatize in one operation. Metasurf Corp., 12830 Eaton Ave., Detroit 27, Mich.

131. Degreasers
Bulletin OP2 gives complete information on the company's line of solvent degreasers. Circo Equipment Co., 51 Terminal Ave., Clark (Rahway), N. J.

132. Isophthalic-Based Finishes
Isophthalic-based enamels are said to have excellent gloss retention, hardness and durability. Recommended for automotive enamels, industrial finishes and farm implement enamels. Data available. Oronite Chemical Co., 200 Bush St., San Francisco 20, Calif.

133. Copper Cyanide
Ledoux' Laboratory Report shows that CP's copper cyanide has high purity necessary to produce good plating results. Copies available. Copper Pigment & Chemical Works, Elizabeth 2, N. J.

134. Silver Anodes
Information on APW Extrusion Process for making silver anodes. This method is said to control grain size, which minimizes anode shedding and aids in producing consistently smooth electrodeposits. Engelhard Industries, Inc., American Platinum & Silver Div., 231 New Jersey Railroad Ave., Newark 5, N. J.

135. Manual of Barrel Processing
Contains latest procedures for coloring, deburring, cleaning, and roughing, plus plant case histories that can help in solving problems. Magnuson Products Corp., 50 Court St., Brooklyn 1, N. Y.

Classified Advertising

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Experienced man preferably with Laboratory and application background to represent us in the field of industrial product end use coatings and corrosion resistant materials in the greater New York area. Excellent opportunity for right man. Address reply attention of Ray H. Sommer, giving full details including salary desired. Brooklyn Paint & Varnish Co., Inc., 50 Jay Street, Brooklyn 1, New York.

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MEMO TO MANAGEMENT

INTERPLANT CORRESPONDENCE

Subject: New DETREX Emulsions

From: Supervisor of Quality Control

To: Purchasing Department

We've tested the four new DETREX emulsions thoroughly and they meet every one of our production standards. Not only do they clean better and more safely but they provide excellent rust-proofing as well. Each has high solvency while remaining completely stable in our hard water. Their minimum flash point is 200°F. — well within safety requirements.

In our humidity cabinet tests for corrosion inhibition, panels treated in a 2% solution by volume were still fully protected after 1000 hours! This is more than ten times the resistance shown by other emulsions we have used.

The combination of cleaning ability, rust-proofing, safety, solvency, stability and corrosion resistance has increased our production and lowered our operating costs. Please specify all four DETREX emulsions as standard for our mechanical spray washing operation.

Development of these excellent rust-proofing emulsions is just one more example of DETREX leadership in *all* phases of metal cleaning and processing. Ask your DETREX representative how you can put this experience to work in your operation.

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